Is prisoners' knowledge about head injury improved following a brief psychoeducation programme?

& Clinical Research Portfolio

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M.A. Hons.

Submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology (DClinPsy)

Institute of Health and Wellbeing
College of Medical, Veterinary and Life Sciences
University of Glasgow

July 2018

University of Glasgow

Institute of Health & Wellbeing

Word count for submission of DClinPsy thesis for examination

Trainee name:	Louise Dianne Buchan
Matriculation number:	2230372B
Title of thesis	Is prisoners' knowledge about head injury improved following a brief psychoeducation programme?
Date of submission of soft bound thesis	26th July 2018
Systematic review chapter word count (6,000 limit, including tables, figures & references)	6938
Major research project chapter word count (6,000 limit, including tables, figures & references)	6473
Thesis word count (maximum 30,000 including appendices)	26680
Justification for exceeding chapter word count (e.g. qualitative MRP chapter, with word count under 6,000 if excluding quotes)	Word count has increased following inclusion of amendments as per internal and external examiner comments and recommendations
Trainee Signature	[redacted]

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Acknowledgements

It has been a privilege to work with Prof Tom McMillan on this research project. Not only have I learned from your immense knowledge but I had the opportunity to conduct research in an area which I feel truly passionate about. What greater opportunity could a trainee ask for? Thank you so much for being an amazing mentor.

Sincerest gratitude to the SPS staff at HMP Low Moss and to both SPS and NHS staff at HMP & YOI Grampian, your enthusiasm supporting this research project was invaluable and much appreciated whilst I conducted this study. Special thanks to T-NB for creating illustrations for the educational intervention and to Maria Henderson Library staff for their professional guidance. Camilla and Caroline, I thank you too for your ongoing support throughout all stages of my research.

Much love to my Dad, Natalie, family, friends, Tealy and the super-seven who have been alongside me as I've traversed the many highs and lows in my doctoral landscape. You helped me find my way on the occasions when I felt somewhat lost. You all had your own ways of reminding me why I had started on this journey and that the impossible end on the horizon was achievable. And to my Mum, I wish you were here to share my achievements.

Finally, to my **St**rong, **A**mazing and **Res**ilient husband and daughters; you truly are my ubiquitous **StARs.** No matter what I faced and how alone I felt in the many twists and turns on my journey across this paradoxical landscape, you have always guided me on my way. Paul, Tara and Natasha, no words will ever truly reflect all our experiences on this life changing journey together. Family Bux, we are awesome!

Chapter One: Systematic Review

Are brief educational interventions effective in changing prisoners' knowledge about health? A systematic review.

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Submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology. Written in accordance with the guidelines for submission to Journal of Correctional Health Care

Word count 6938, including abstract and references.

Abstract

Objective: Prison populations differ from the general population as they have disproportionate levels of disease, disability and chronic ill health. Health education interventions have been associated with improving knowledge and health outcomes of prisoners. Single session educational programmes may be a cost-effective intervention to meet demands upon prison healthcare services.

Methods: PsycINFO, Medline®, CINAHL and Proquest ASSIA were searched for relevant research.

Results: Six studies were included in the review and all were single-session pre-post design. Topic areas included HIV/AIDS, hepatitis, sexually transmitted diseases and opioid overdose. Findings in all studies indicated the intervention enhanced participant health knowledge.

Conclusion: Findings suggest single session interventions can be successfully delivered in prison environments and are effective in increasing prisoner health knowledge although long term gains are unclear.

Keywords: prisoner, health knowledge, health education, intervention

Introduction

The evidence for disproportionate levels of disease, disability and chronic ill health faced by prisoners is well documented (WHO, 2014). Prison populations differ from the general population with higher prevalence rates of socioeconomic deprivation, poorer education, unstable lifestyle, trauma, substance misuse, greater risk of mental health problems (Dunlop & Bennett, 2017) and traumatic brain injury (Shiroma, Ferguson, & Pickelsimer, 2012). Higher rates of physical health problems persist when sociodemographic differences and alcohol consumption are controlled for (Binswanger, Krueger, & Steiner, 2009). In minority ethnic groups, which are substantially over-represented in a prison population (Ginn, 2013), mental health needs of females are greater yet fewer services exist (Taylor, Williams, & Eliason, 2002). For male prisoners, many have led historic lifestyles considered to be unhealthy which become exacerbated by imprisonment (Finnie, 2018). Such factors do not occur in isolation resulting in prison populations having higher co-morbidity levels of complex mental and physical health problems in comparison to the general population (Wright, Jordan, & Kane, 2014).

The disproportionate population differences alongside increasing management and health care needs of prisoners create high demand upon healthcare staff to provide primary care in an environment which can militate against service delivery (Condon, Gill, & Harris, 2007). Difficulties associated with the delivery of interventions in prison include accessing services, negative relationships with frontline staff and isolation (Frank Terry, Praetorius, & Nordberg, 2018). Identifying opportunities to address the needs of prisoners amongst inherent challenges of health promotion in prison is considered a priority (Woodall, 2016). To enhance an individual's capacity to promote health, access is required to health information framed in a way which can be understood, evaluated and utilised in a meaningful way (Donelle & Hall, 2014). Deficits of health knowledge have been associated with non-participation in health interventions (Muessig et al., 2016) and poor self-efficacy for health management (Loeb, Steffensmeier, & Lawrence, 2008). The implementation of effective interventions that facilitate prisoners to generate and translate knowledge are central to improving their health (Kouyoumdjian et al., 2015). Educational programmes for male prisoners, which have been developed to consider factors typically overlooked in previous health care interventions, have enhanced understanding of health knowledge and associated lifestyle choices (Donaghy, 2006). In addition, the delivery of health education to female prisoners which focus on specific topics considered meaningful to them are also more likely to enhance knowledge (Dinkel & Schmidt, 2014).

Multi session educational interventions which target health factors associated with a higher prevalence in a prison population have been the focus of several studies and whilst all suggest the intervention improves prisoner knowledge, the effectiveness and efficacy of educational interventions is varied. Pomeroy, Kiam and Green (2000) delivered a twice weekly, 90 minute group which ran for five weeks which improved knowledge of Acquired Immune Deficiency Syndrome (AIDS) [F (1,47) = 30.58, p < .001, partial-eta squared 1.13]. Yen, Peyrot & Prino (1989) delivered a 12 hour programme, comprised of eight weekly sessions of 90 minutes duration which improved overall knowledge of the physiological effects of alcohol [p = < .001, d = 0.86] and drugs [p = < .001, d = 0.80], anger management skills [p = < .05, d = 0.44] and substance misuse [p = < .05, d = 0.48] which was rated as a positive experience by participants. A six week prevention of Hepatitis C Virus (HCV) educational programme, where each session lasted one hour in duration, improved prisoners' knowledge for behaviours [p = .16, d = 0.56] and relationships [p = 0.65, d = 0.20] (Zucker, 2009). As the findings were not statistically significant the change in knowledge levels may be attributable to other factors not the intervention per se. A study by Lehman et al., (2015) reported a significant increase in knowledge of risk behaviours [p < .001] related to HIV [d = .42], sexual activity [d = 0.42] and drug use [d = 0.35] after attending a six week disease-risk reduction curriculum lasting a total of 20 hours. Peyrot, Yen and Baldassano (1994) delivered an eight session group of 90-120 minutes lasting a total of 12-16 hours which was effective in improving several areas of knowledge associated with substance misuse [$p < .001$]. Whilst the authors did not report effect sizes, they highlighted that despite the absence of data to ascertain whether the impact of their study was more or less effective than other prison programmes, in terms of cost-effectiveness their programme could be offered to a wider number of individuals at a relatively low cost in comparison to high modality programmes. In addition, whilst multi session studies evidence the effectiveness of education on knowledge they remain susceptible to the factors reported by Frank Terry et al., (2018).

Single session health educational interventions to improve participant knowledge present as a logical progression towards the delivery of low cost interventions in a prison setting. Within prisons the provision of easily understood health information to promote health in prisons is reliant on resource availability within the prison system and commitment levels to support prisoner health care by prison management (WHO, 2014). As such, low resource intensity interventions are less likely to be affected by such factors and more likely to be viewed as feasible and supported by both prison and health care staff. In addition, with the increased pressure on health care teams to deliver services which should

be equivalent to community care (Bagnall et al., 2015), ensuring prisoners have access to health information would mirror the shift in the general population from a paternalistic patient care model to one where individuals adopt an autonomic approach to managing their own health care (Ruggiano, Lukic, Blowers, & Doerner, 2016). The value of single sessions is that they can address the difficulties of attending services and fluidity of prison populations. Given the inequality and exponential increase of the global prison population, conducting a review to explore the effectiveness of single session interventions increasing prisoners' health knowledge is an initial step towards ascertaining whether this intervention has potential to address the increasing health care demands and barriers associated with delivering health care in prisons.

Aim

To identify the most effective single session education programmes for changing health knowledge in a prison population.

Research Questions

1. Are single session programmes successful in improving knowledge about health?

2. Are there common elements that make these projects successful or lessons learned from unsuccessful programmes?

3. What are the differences between the types of educational programmes delivered to male and female populations?

4. Do single educational interventions need to be facilitator led?

Methods

Inclusion and exclusion criteria

As the aim of the review is to measure change in knowledge only quantitative studies that met the following criteria were eligible for inclusion:

- Adult male and female offenders aged 18 and over serving a current custodial sentence in prison.
- Single session educational interventions delivered by health care staff, prison staff or peer mentors in a group or 1:1 format via direct or indirect resources.
- Change in knowledge levels is a prespecified primary or secondary outcome measure.
- Study design is pre-post with or without follow up.

Search Strategies

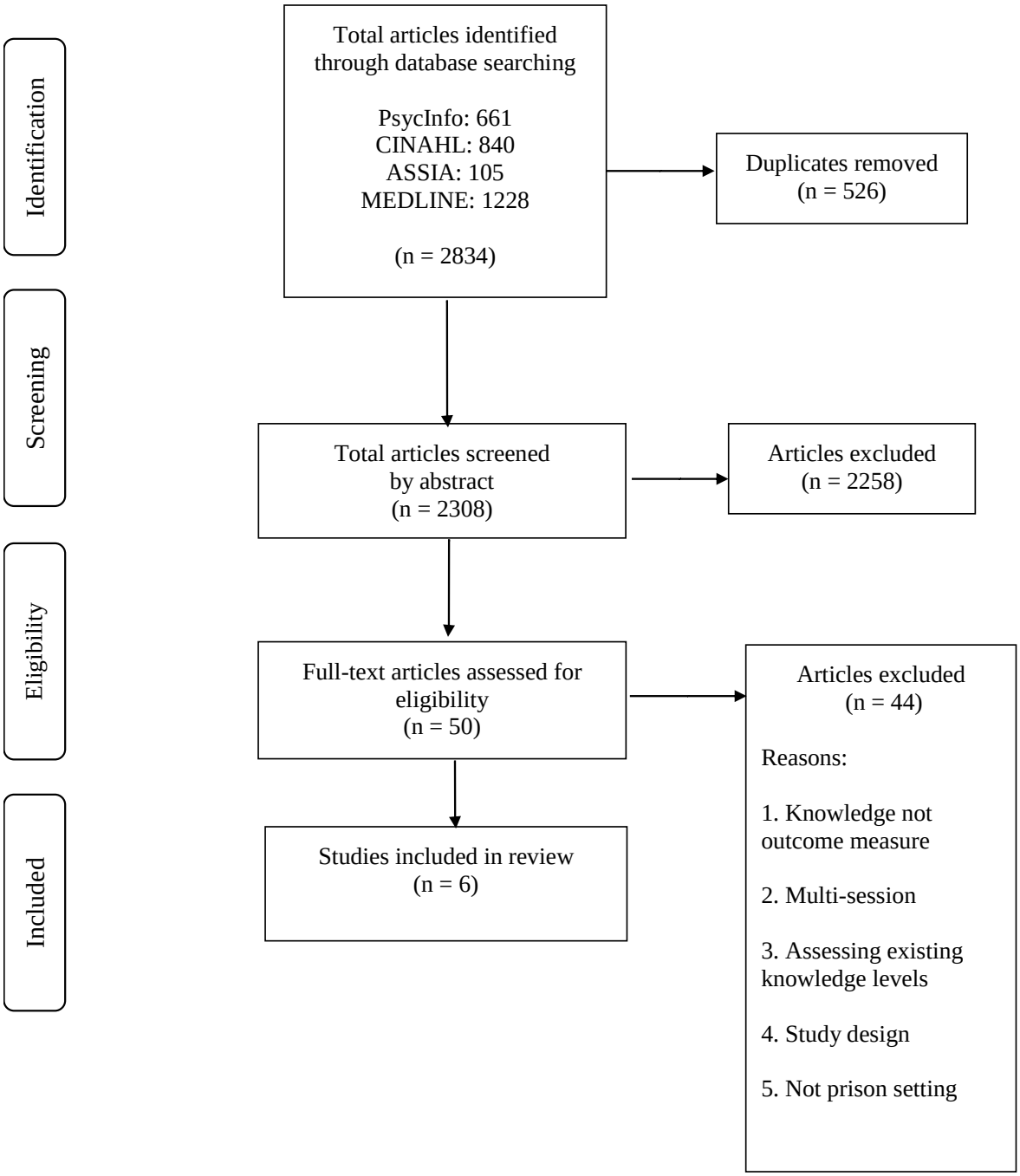
Searches were conducted on the 16th February 2018 in the following electronic databases; PsycINFO, Medline®, CINAHL and Proquest ASSIA. Initial scoping searches were conducted to identify relevant search terms which were finalised in consultation with information specialists. To ensure the search captured all article types, parameters were not set for published dates or publication type. The main search terms are summarised below:

1. Prison* OR inmate* OR offender* OR incarcerat* OR correctional* OR penetentiar*
2. Health adj3 knowledge OR health adj3 aware* OR health adj3 educat* OR health adj3 psychoeducat* OR health adj3 promot* OR health adj3 coach* OR health adj3 learn*
3. Program* OR intervent* OR trial OR harm reduction OR pilot
4. 1. AND 2. AND 3.

A total of 2834 articles were identified from the searches. Additionally, 2 published systematic reviews identified from the searches were hand searched however no articles met the inclusion criteria (Maruca & Shelton, 2016; Senowski, Norris, McGaughey & Branscum, 2016). A total of 526 articles were duplicates. The title and abstracts of the remaining 2308 articles were screened for relevance which resulted in the exclusion of

2258 articles. 50 articles were read in full of which 44 were excluded leaving 6 studies for inclusion in the final review (see Figure 1). Data was extracted from the final six studies which captured descriptive and analytical data relevant to the review questions. The search, screening and data extraction were all conducted by the author.

Figure 1 *Flow diagram detailing article selection*



Quality Rating

Five domains were used to assess risk of bias based on systematic reviews for observational studies in epidemiology (Sanderson, Tatt, & Higgins, 2007) and criteria used in a recent systematic review conducted in a prison population (Moynan & McMillan, 2017). The criteria illustrated in Table 1 must be met for studies to be rated as low in risk of bias.

Table 1 *Domain and criteria to assess risk of bias*

Domain	**Criteria**
1. Methods for selecting study participants	Inclusion and exclusion criteria are clear
2. Methods for assessing study variables	(i) The use of assessment measures which are relevant to the study aims and objectives and; (ii) A matched control group was used as a comparator.
3. Design specific confounders	The sample was demographically representative of: (i) the larger population from which it was taken (e.g. study site), *and;* (ii) the offender population in the larger geographical area
4. Methods to control confounding	The study controlled for one or more of the following confounds: (i) literacy levels (ii) years of education or educational attainment (iii) use of English language (iv) age (v) associated health risk factors (vi) offending history (vii) accounting for missing data.
5. Design and analysis plan	The study examines the temporal relationship between knowledge by assessing knowledge change pre and post intervention.

Three of the six articles were independently assessed by the author and a second rater who was a clinical psychology trainee in their final year and were categorised as ‘low’ or ‘high’ for susceptibility of bias based on the five domains. There was high inter-rater agreement for 41/42 ratings (98%). The single disagreement was in domain 1 and was resolved by discussion (appendix 1.2).

Results

All six studies used a pre-post design. Four used samples from a male only prison and the remainder used females only. The overall risk of bias was high for 17 out of 42 (40%) variables (see Table 2). Risk of bias was lowest for the domains of design and analysis plan. Risk of bias was highest for the domains of methods for assessing study variables and design specific confounds. For methods of selecting study participants and methods to control confounding variables, risk of bias was mixed. The characteristics and findings of all studies are reported in Tables 3 and 4 with narrative synthesis across the five risk of bias domains. Topic areas of the interventions aimed to improve knowledge about HIV/AIDS (1, 2, 3, 5), hepatitis (1, 2, 6), sexually transmitted diseases (STD) (1, 2, 6) and opioid overdose (4).

Table 2 Risk of bias defined as low or high

Study	Methods for selecting study participants	Methods for assessing study variables		Design specific confounders		Methods to control confounding	Design and analysis plan
		Assessment Measures	Control Group	Local prison population	Wider prison population		
1. Fish et al., 2008	Low	Low	Low	Low	High	Low	Low
2. Fluhmann et al., 2012	Low	Low	High	High	High	Low	Low
3. Ko et al., 2009	High	Low	High	High	High	Low	Low
4. Petterson & Madha-Amiri, 2017	Low	Low	High	Low	Low	High	Low
5. Gupta et al., 2015	Low	Low	High	Low	High	Low	Low
6. Lehma, 2001	High	Low	High	High	High	High	Low

Table 3 Characteristics of reviewed studies[1]

Study number, author, year of publication, location and date	Study participants and inclusion/exclusion criteria	Participant demographics	Intervention and comparators	Outcome measures
1. **Fish et al., 2008** Ulster Reception Centre, New York, USA. From February 2004 for 3 month period.	Adult male prisoners. Total 510 invited, 270 declined Intervention ; T1 N=120, T2 N=119 (attrition due to parole) Control; T1&2 N=120 Excluded non-English speaking inmates.	Communicable disease risk factors; Unprotected sex N=118 Tattoo/piercing N=144 Inject drug use N=18 Unspecified N=2	Group intervention. 30-35 minute educational videotape with accompanying comic-book-style information pamphlet for HIV, hepatitis and STD. Consent and data collected by nurse. Control: risk assessment and testing request.	10 item knowledge & attitudes questionnaire (closed response: only 'yes' reported as response option). 11 item risk assessment questionnaire (closed response: yes/no/not sure). Request for communicable disease testing form. Satisfaction survey for videotape.
2. **Fluhmann et al., 2012** Schongrun penitentiary, Solothurn, Switzerland July to November 2008	Adult male prisoners Total 24 admitted, 2 excluded, 1 declined Included all German speaking prisoners on admission to prison.	Age M=37.4 years Educational attainment; primary N=2, secondary N=15 and tertiary N=4. Opiate substitute programme; N=11, no programme N=10.	1:1 Intervention. StIE for HCV, HIV/AIDS and STD. Delivered by principal investigator. No control.	13 item knowledge questionnaire (closed response: yes/no/don't know) Participant evaluation of StIE
3. **Ko et al 2009** Taiwan October to December 2005	Adult male prisoners Total 136 invited and consented T1 & T2 N=123 Attrition not reported. Inclusion/exclusion not reported	Age M=38, range 20-62 Educational attainment; elementary N=27, middle N=68 and high school N=39. Substance misuse prior to incarceration N=129 Prior HIV testing N=134	Group intervention One hour lecture for HIV. Delivered by HIV nurse specialist. No Control.	12 item knowledge questionnaire (closed response: true/false) (Ko et al., 1996), AIDS knowledge questionnaire (Mao et al., 2005), SHB (Kang et al., 2004).CQ (Rollnick et al., 1992).[2]

[1] Abbreviations: HIV; Human Immunodeficiency virus, AIDS; Acquired Immune Deficiency Syndrome, StIE; Structured Information Exchange, STD; Sexually Transmitted Disease, SHB; Self-efficacy rating scale for HIV risk behaviours, RCQ; Readiness to Change Questionnaire.

2 See Appendix 1.3 for full reference

Table 3 Characteristics of reviewed studies (continued)[3]

Study number, author, year of publication, location and date	Study participants and inclusion/exclusion criteria	Participant demographics	Intervention and comparators	Outcome measures
4. **Petterson et al 2017** Oslo, Norway 2 month period during 2015	Adult male prisoners. Total 31 invited and participated. Included former or current opioid users, individuals at risk of witnessing or experiencing overdose and released within next 6 months. Excluded participants with previous naloxone training.	Age M=35.6 years Opioid use; daily N=9, almost daily N=2, previously N=13, never N=7. Injecting drug use N=14. Receiving opioid maintenance treatment prior to prison N=15. Witnessed overdose N=29. Experienced overdose N=21.	1:1 intervention. Brief naloxone training, completion time 15-30 minutes. Conducted by first author. No control.	OOKS (Williams et al., 2013)[4]
5. Gupta et al., 2015 San Francisco, USA Sept 2012 to Feb 2013	Adult female prisoners Total 114 attended education session 24 declined completing measures T1 N=90, T2 N=82, T3 N=53 Attrition not reported. Included all English speaking prisoners	Age M=34.7 years. Years education M=12.1. Years in jail as adult M=3.9. Ethnicity: Black/African American N=43, White N=13, Other N=20 Hispanic/Latino/Spanish N=14, Tested for HIV=89, in last year N=74. 90% engaged in HIV risk behaviours	Group intervention. 15 minute interactive education programme and summary brochure for HIV nPEP. Conducted by jail programme co-ordinator. No control.	nPEP risk behaviour, guidelines and location knowledge quiz. Scored based on correctly identified or answered responses (unclear whether response open or closed)

3 Abbreviations: OOKS; Opioid Knowledge Overdose Scale, nPEP; non-occupational post-exposure prophylaxis.

4 See Appendix 1.3 for full reference

Table 3 Characteristics of reviewed studies (continued)[5]

Study number, author, year of publication, location and date	Study participants and inclusion/exclusion criteria	Participant demographics	Intervention and comparators	Outcome measures
6. **Lehma (2001)** Southwestern Gulf Coast, USA.	Adult female prisoners Prison HCW Inclusion/exclusion criteria not reported	Not reported	Group intervention. 1 hour education session for hepatitis and STD with teaching handouts. Delivered by advanced practice nurse. No control.	Knowledge questionnaire (open response: short answer). Self-efficacy questionnaires (closed response: 5-point Likert scale 1= very little to 5 = a lot)

[5] **Abbreviations:** HCW; Health Care Workers.

Table 4 Study design, analysis and results[6]

Study number and author	Design and analyses	Results	Summary of findings
1. **Fish et al., 2008**	Pre-post. Chi-square to test distribution of risk factors and testing requests between intervention and control *and* differences in proportion of intervention group participants demonstrating knowledge of communicable diseases following intervention.	Within-group increase in knowledge T1 to T2 for treatability ($p < 0.0001$), symptoms, ($p = .002$) and diagnostic prognosis ($p < .0004$) of communicable diseases for intervention group. No significant differences between-group for testing requests or risk assessment. Overall rating of video satisfaction survey was excellent or good (85.9% n = 97).	A video and pamphlet are useful in improving and retaining knowledge of and attitudes towards communicable diseases.
2. **Fluhmann et al., 2012**	Pre-Post with 1 month follow up. Mixed regression to test knowledge changes at T1, T2 & T3: prisoner as random variable with measuring time and participation (n=11) or nonparticipation (n=10) in a substitution program as fixed variable. Confounds included age, education, enrolment in substitution program and interaction between each.	Within-group significant increase in knowledge T1 to T2 ($p < .0001$) and T1 to T3 ($p < .0001$) and non-significant decrease T2 to T3 ($p = 0.14$). Greater between-group increase in HCV knowledge for programme group ($p < .0001$). Level of education had no effect knowledge levels.	StIE improved participant knowledge of HCV, HIV/AIDS and STD as measured by answering questions correctly. Knowledge change was greater for participants attending substance misuse programmes.

[6] **Abbreviations:** HIV; Human Immunodeficiency virus, AIDS; Acquired Immune Deficiency Syndrome, StIE; Structured Information Exchange, STD; Sexually Transmitted Disease.

Table 4 Study design, analysis and results (continued)[7]

Study number and author	Design and analyses	Results	Summary of findings
3. **Ko et al 2009**	Pre-post. Repeated measures ANOVA with corresponding post hoc one sample paired t-test for all outcome variables. Wilcoxon Test used to measure RCQ stage of change.	Within-group increase in AIDS knowledge ($F = 104.16$, $p < .0001$, $d = 1.23$) after controlling for educational years. Self-efficacy to reduce HIV risk behaviours significantly improved ($F = 26.5$, $p < .001$, $d = 0.46$).	A single group educational session education can be effective in increasing knowledge of HIV for drug dependent inmates.
4. **Petterson et al 2017**	Pre-post Wilcoxon signed-rank test to compare knowledge scores at T1 and T2.	High baseline knowledge at T1. Within-group improvement in knowledge across all domains at T2 (risk factors, signs, actions and naloxone) $p < .001$; $r = 0.88$. Greatest increase in knowledge for naloxone use ($r = 0.85$) and risk factors ($r = 0.74$).	A brief naloxone training session in prison was effective in increasing overall knowledge of opioid overdose in vulnerable group.
5. **Gupta et al., 2015**	Pre-post with one week follow up Paired t-test to compare knowledge scores over time. Multivariable regression analyses to assess differences in awareness, knowledge scores and likelihood to use nPEP across demographic characteristics or self-reported risk behaviours.	Within-group increase in overall knowledge scores at T2 and T3 ($p < .001$). Differences for knowledge scores found greater increase in nPEP guideline and location knowledge than behavioural knowledge $p < .001$ at T2 and T3. Behavioural knowledge decreased between T2 and T3 ($p < .001$). Demographic or HIV risk characteristics were not significant predictors of learning.	A brief educational programme was an effective intervention to deliver basic HIV prevention information to a high risk population.

[7] **Abbreviations:** ANOVA; Analysis of Variance, RCQ; Readiness to Change Questionnaire, nPEP; non-occupational post-exposure prophylaxis, HIV; Human Immunodeficiency virus, AIDS; Acquired Immune Deficiency Syndrome.

Table 4 Study design, analysis and results (continued)[8]

6. **Lehma (2001)**	Pre-post Descriptive statistics for within-subjects knowledge change and independent t-test for between-subjects knowledge increase. Correlation (statistical method unspecified)	Within-subject knowledge increase of prisoners for hepatitis (T1: M= 2.1, Mdn=2.2, SD=1.27 and T2: M=4.7, Mdn=5.0, SD=0.56) and STD (T1: M=2.7, Mdn=3.0, SD=1.25 and T2: M=4.8, Mdn=5.0, SD=0.50). Between-subjects knowledge increase greater for HCW than prisoners for hepatitis at T1 ($p = 0.002$, $r = 0.26$) and T2 ($p = 0.009$ $r = 0.19$). Positive relationship between changes in prisoner STD knowledge and self-efficacy scores at T1 ($r = 0.76$) and T2 ($r = 0.45$).	A group health education program is effective way to change knowledge and self-efficacy in a female prison population.

[8] **Abbreviations:** HCW; Health Care Worker, STD; Sexually Transmitted Disease

1. Methods for selecting study participants

Risk of bias was mixed as inclusion and exclusion criteria were not reported for two studies (3,6) which were rated as high risk of bias. The remaining four studies all contained inclusion criteria that specified participants spoke the native language of the country where the study was conducted. Criteria for study 4 were clear and targeted a specific prison sub-population. Studies 1 and 2 extended study invitations to all prisoners at the point of admission to prison and study 5 to those engaged in existing prison health care programmes.

2. Methods for assessing study variables

(i) The use of assessment measures recognised as valid in adult, forensic or relevant clinical populations

Risk of bias was low for assessment measures. Only two studies used recognised assessment methods in their study design (3,4) and the remainder used idiosyncratic measurements that were developed giving specific consideration to study aims. Interventions were developed using focus groups (1, 2, 5) and population needs identified from clinical practice (6) with all drawing upon expertise of relevant clinical and professional populations. Thereafter outcome measures were created which captured the relevant factors and objectives pertaining to each intervention.

(ii) A control group was used as a comparator

Risk of bias was high as only one study used a control group (1). Participants were randomly assigned to the intervention or control group by coin-flip method.

3. Design specific confounders

(i) the sample was demographically representative of the larger population from which it was taken

Risk of bias was mixed as three studies were rated of being at high risk as the sample size was small (2), sampled from a specific sub-population (3) and no reference was made to generalisability of results (6). The remainder were representative of the prison population and at low risk of bias.

(ii) the offender population in the larger geographical area

Risk of bias was high as only the findings of study 4 could be generalised beyond the population locality.

4. Methods to control confounding

Risk of bias was mixed for this domain. Study 6 did not report any participant characteristics and methods to control for confounds and was rated as high risk of bias. The effects of education on knowledge learning were low risk of bias in three studies, with two controlling for education in the analysis (2, 3) and one developing the content of the intervention to address typically low literacy levels associated with prisoners (1). The effect of age was only reported in a single study (2) which affected only one knowledge category. Prior engagement with health education programmes was accounted for in study 2. Attrition rates were reported in three studies (1,3, 5,) with study 1 excluding the single drop out from analysis citing parole as the factor. There were no drop outs for studies 2 and 4. Risk characteristics and demographic factors were considered in three studies (1, 4, 5). Study 1 assessed distribution of risk factors across control and intervention groups which indicated no differences between groups and regression analysis in study 5 found no significant predictors for change in knowledge scores regardless of demographic or HIV risk characteristics. As such studies 1 and 5 were at low risk of bias. Whilst participants characteristics of study 4 were representative of a high risk population no confounds were considered and risk of bias was rated as high.

5. Design and analysis plan

Risk of bias was lowest for this domain as all studies examined the temporal relationship between knowledge change pre and post intervention. Outcome measurement at T1 and T2 were captured immediately before and after delivery of the intervention. Two studies assessed knowledge change at one month (2) and one week (4) follow up.

Discussion

1. Are single session programmes successful in improving knowledge about health?

All of the studies in this review reported an improvement in knowledge about health following a brief intervention. The increase in participants' scores at T2 suggests that the information delivered in the intervention enhanced participant knowledge in comparison to knowledge at T1. Whether improvement in knowledge is retained over time is less clear. Two studies (2, 5) found increased knowledge at one month and one week follow up respectively. Study 6 only reported descriptive data for knowledge change therefore little inference can be drawn about the success of intervention to improve knowledge. The remainder of the studies reported statistical significance in improving knowledge, however the efficacy of the interventions is mixed. Only two studies reported moderate (3) to large

(4) effect sizes in comparison to studies 1, 2 and 5 where the efficacy was unclear as no effect sizes were reported. As no studies provided data related to participant attrition the findings reported in the studies may potentially be inflated. Gains in knowledge may not translate to behaviour change and adaptations to support this can be limited in prison settings (Cinar et al., 2017), however education can be as effective as risk reduction programmes which are typically more intensive (Robertson et al., 2011).

2. Are there common elements that make these projects successful or lessons learned from unsuccessful programmes?

All studies utilised written materials alongside oral or visual delivery of the intervention, with three issuing materials for personal retention (1,5,6). Study 1 developed a pamphlet to account for typical educational levels in a prison population, but it was unclear whether the brochures or handouts in studies 5 and 6 made similar adaptations. Whilst the written materials were not issued in isolation, self- help materials are only appropriate provided they are written at a level consistent with average prisoner reading age (Dunlop & Bennett, 2017). Educational methods which are multi-modality are more likely to enhance an individual's capacity to learn (Marcy, 2001). Four of the studies delivered the intervention in group format (1, 3, 5, 6) and two on a 1:1 basis (2,4) with both methods yielding an increase in knowledge scores. Although the participant evaluation in study 2 highlighted that the majority would not prefer a group format, the largest participant N was found in group studies (1, 3, 5). Recruitment rates were most successful when conducted at point of admission to prison (1, 2, 3). Whilst the vulnerability of prisoners can be heightened at this juncture, this demonstrates that relatively inexpensive initiatives can be delivered to many prisoners, which may address the need to enhance existing processes in a prison reception area (Brown, Cullen, Kooyman, & Forrester, 2014). Participant recruitment was also effective when targeting prisoners already engaged in programmes (5). Duration of group interventions ranged from 15 minutes (5), 30 minutes (1) and 1 hour (3,6) and length of intervention did not affect the capacity for knowledge change. As all studies were brief, innovative and adopted less formal strategies they are likely to overcome the reluctance of prisoners to engage with the prison system or seek help (Cobb & Farrants, 2014).

3. What are the differences between the types of educational programmes delivered to male and female populations?

The focus of five studies was BBV interventions conducted in male (1, 2, 3) and female (5, 6) samples. The content of interventions only differed between populations for study 4 which focussed on opiate overdose. Interventions which contained education related to STD were delivered to both male (1,2) and female (6) populations. Whilst there is an overlap of prevalence rates for certain health factors in both populations, those which are unique to imprisoned women can be overlooked as this population subsists in a criminal justice system primarily designed for men (Colbert, Sekula, Zoucha, & Cohen, 2013). For example, it is estimated that as many as 10% of incarcerated women are pregnant with many having limited education and access to information about pre and post-natal care (Ferszt & Erickson-Owens, 2008). Education needs are found within populations, for example older adult prisoners have additional and differing needs to their younger counterparts (Loeb et al., 2008; Dinkel & Schmidt, 2014). Only one study controlled for age and found age significantly affected HCV knowledge (2).

4. Do single educational interventions need to be facilitator led?

Most interventions were delivered to prisoners by a facilitator. Only one study chose a didactic method to deliver the intervention using an educational video instead (5) and this was also effective in increasing knowledge, the likelihood being that it was designed to reflect the target population. Two studies were delivered by the authors (2, 4) and two studies were delivered by nursing staff (3, 4). Only one study was delivered by prison staff (5) however participant engagement was more likely as participants were already engaged with prison programmes. An intervention which is not dependent upon a facilitator may be beneficial given formerly incarcerated men have cited distrust of prison staff (Buck et al., 2006) and a discourse persists of 'manning-up' or not engaging unless it is to 'work the system' exists (Cobb & Farrants, 2014). Programmes such as educational outreach via handouts or fliers and the prison television channel may be an alternative for prisoners isolated from services (Adams et al., 2015). In addition, peer support services have been identified as a cost-effective and acceptable way to target such barriers (Bagnall et al., 2015). Either of these approaches might be viewed as preferential to a wider number of prisoners, including those who declined participation in the studies contained within this review.

Overview of Strengths and Limitations of Research Literature:

Several articles excluded in Stage 2 assessed the effectiveness of multi-session interventions in improving health knowledge. As healthcare demands increase in the prison population the articles included in this review are an intuitive and cost-effective step

to address this pressing factor by delivering single session health interventions. In addition, conducting these studies are the foundation of an evidence base in an area where a paucity of research exists. With a lack of previous research to inform study methods and design, authors developed a variety of novel ways of delivering interventions based upon prisoner focus groups, existing research of population needs and expert opinion. The interventions were conducted at various locations and time points in a prisoner's custodial sentence proffering brief interventions as a resource which is adaptive and flexible in a prison environment. None of the studies used a matched control group and the majority of studies had modest samples sizes therefore the efficacy of the interventions and improved knowledge gain is tentative. The lack of control groups and small participant numbers are generally considered a limitation associated with research in prison populations.

Strengths and limitations of this review

A limitation of this review is that stage 1 and 2 screening was conducting by a single reviewer. Specifying a pre-post design as inclusion criteria ensured low risk of bias for study design and analysis plan however this placed limitations on the findings of the review in that only short term as opposed to long term knowledge gains are reported. A further limitation is that study authors were not contacted to provide the necessary data to calculate efficacy of the studies where effect sizes were not reported. Conclusions about the effectiveness of single session interventions improving health knowledge are tentative given the modest number of studies and their limitations.

Future research

The recent shift towards reframing the concept of health care delivery as a holistic health approach within the prison system (Kipping, Scott, & Gray, 2011) provides a platform for single session educational interventions to be delivered. Single session educational interventions are low intensity and fit with the reorganisation within prison health service to deliver health provision which is primary care focused (Condon et al., 2007). Service user involvement is an integral part of community care and resource development therefore widening the involvement of prisoners in developing new interventions may increase patient engagement within prison systems (Cowman & Walsh, 2013). Of greatest relevance is that tackling health inequalities and improving general wellbeing of offenders may lead to a reduction in recidivism (O'Dowd, 2009).

Conclusion

Single session interventions are effective in increasing prisoner health knowledge however there is limited evidence for retention of knowledge gain over time. The success of interventions was independent of the method of delivery and utilising multi-modal communication of educational content was beneficial for prisoner learning. There is a paucity of studies exploring knowledge gains after attending single session educational programmes therefore future research should focus on the development of interventions which target the high prevalence rates of health problems in a prison population. This is fundamental to health service development in prison environments if the increasing needs of prisoners are to be met.

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Chapter Two: Major Research Project

Is prisoners' knowledge about head injury improved following a brief psychoeducation programme?

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Submitted in partial fulfilment of the requirements for the degree of Doctorate in Clinical Psychology. Written in accordance with the guidelines for submission to Criminology and Criminal Justice.

Word count 6473, including abstract and references.

Plain English Summary

Introduction

Intervention resources have been identified as a key area to support the development of NHS brain injury services in the Scottish Prison Service (SPS). The rates of head injury (HI) are higher in a prison population compared to the general population. A recent study found that 94% of prisoners self-reported at least one HI of which 59% reported repeated mild HI (mHI). Common long-term symptoms of mHI include headaches, tiredness, dizziness, memory problems, poor concentration, anxiety, blurred vision and personality changes. Long-term effects of mHI are less obvious and often not associated with HI such as being aggressive and impulsive. The Scottish Intercollegiate Guidelines Network (SIGN) 130 recommends that information, reassurance and educational approaches should be provided as treatment following mHI. SIGN Guidelines are unbiased clinical guidelines based on evidence from scientific studies to help health care professionals and patients make appropriate decisions about health care. This study will examine the effectiveness of a simple psychoeducation intervention that might be a suitable resource for delivery in prisons.

Aims and hypothesis

The study explores what prisoners know about the effects and long-term consequences of HI. It will also measure the effectiveness of a brief education intervention delivered to groups of prisoners about the cause and effects of HI. It is predicted that;

1. Knowledge about the effect of HI is greater in prisoners who have a history of HI compared to those with no HI.

2. The intervention will improve knowledge about the symptoms and long-term effects of HI.

3. Knowledge about HI will be improved one-month after the group.

4. The intervention will reduce self-reported levels of aggression and impulsivity.

Methods

The study recruited male prisoners aged 18 years and older currently serving their custodial sentence at HMP Low Moss, Glasgow or HMP & YOI Grampian, Peterhead. Prisoners were not able to participate if they did not have basic reading and writing skills,

not fluent in English, had a cognitive, physical or sensory impairment which limited their ability to work independently in a group, a deteriorating neurological condition or severe mental health difficulties. The study had three stages; screening appointment (T1), group intervention (T2) and a one-month follow-up appointment (T3). At T1 34 participants met with the researcher on a 1:1 basis and completed vignettes and symptom checklists to measure knowledge. A vignette is a short paragraph of words which provides a brief description of people, places and events so the individual reader can understand what happened in a specific situation. Questionnaires related to offending history, head injury, aggression and impulsivity were also completed. T2 was a one-hour interactive group about the long-term causes and effects of HI delivered to 19 participants by the researcher. Vignettes and symptom checklists were completed immediately following the group. All participants were issued with an information booklet entitled 'Helpful things to know about head injury'. At T3 11 participants met with the researcher on a 1:1 basis and completed vignettes, symptom checklists and aggression and impulsivity questionnaires.

Results

The findings suggest that the intervention improved knowledge about the symptoms and long-term effects of HI immediately after the group and at one-month follow-up. There was no improvement in self-reported levels of aggression and impulsivity. A comparison between participants with mild HI and Moderate-Severe HI indicated that knowledge levels were moderately higher for participants with mild HI.

Conclusion

The intervention is effective in improving prisoners' knowledge of HI but not aggression and impulsivity. A brief intervention group can be successfully delivered within a prison environment using resources which are cost-effective and targets a relevant population whose needs are not currently met within the SPS.

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Abstract

Introduction: Developing educational based interventions for head injury (HI) awareness within prison is a key area to support the growth of brain injury services for people at risk of HI. Prevalence rates of HI in the prison population are higher than the general population and associated with offending behaviour.

Aims: To explore what prisoners know about symptoms and long-term effects of HI and develop a low-cost single-session psychoeducational group about HI which can be delivered to large numbers in prisons.

Methods: A pre-post design recruiting male prisoners aged 18 and over serving a custodial sentence. The study had three stages; screening appointment (T1; N = 34), one-hour psychoeducation group about the symptoms and long-term effects of HI (T2; N = 19) and one-month follow-up appointment (T3; N = 11). HI knowledge was assessed by two open-ended measures (vignettes) and one close ended measure (HI symptom check list) at T1, T2 and T3. Two scores were calculated for participant knowledge as measured by their responses to vignettes; score 1 was number of symptoms or effects of HI which corresponded with the forced choice responses from the symptom checklist and score 2 was the number of symptoms or effects of HI which corresponded with the HI symptom checklist or symptoms or consequences of HI listed in SIGN 110 and 130. Rating scales were used to assess aggression and impulsivity at T1 and T3. Within-subject comparisons were made across study stages to evaluate the effectiveness of the intervention.

Results: Participant HI knowledge significantly increased from T1 to T2 (Score 1; d = 0.91, 95% CI [0.36, 1.46], and Score 2; d = 0.99, 95% CI [0.38, 1.60]) and was sustained at T3 (Score 1; d = 1.27, 95% CI [0.44, 2.11], and Score 2; r = 0.60). There were no improvements in ratings of aggression and impulsivity (T1 to T3). A between-group comparison of severity of HI and HI knowledge indicated knowledge was moderately greater for those with mild than moderate-severe HI.

Conclusions: The psychoeducational group increased prisoners' knowledge of HI and is an initial step towards the development an intervention suitable for delivery in Scottish prisons by NHS staff.

Key words: prisoner, knowledge, head injury, psychoeducation, intervention

Introduction

The prevalence of head injury (HI) in offenders has been estimated to be 50% (Farrer & Hedges, 2011) to 60% (Shiroma et al., 2010). Resources for intervention have been identified as a key area to support the development of NHS brain injury services in the Scottish Prison Service (NPHN, 2016). In the UK there is no research exploring the effectiveness of potential interventions despite the consensus that needs of prisoners with HI are not being met (O'Rourke, Linden, Lohan, & Bates-Gaston, 2016). The Scottish Intercollegiate Guidelines Network (SIGN) 130 recommends the provision of information, reassurance and educational approaches for treatment of mild Traumatic Brain Injury (mTBI) of which supporting evidence was reported in a recent systematic review (Nygren-de Boussard et al., 2014). Whilst guidelines recommend provision of advice for early symptom management in the acute phase following HI, the provision of such information does not necessarily ensure that an individual will retain and subsequently benefit from the information(McMillan, McKenzie, Swann, Weir, & McAviney, 2009).

A recent study on a sample of 139 prisoners found that 94% self-reported at least one HI of which 59% reported more than one HI and most of these were mild (Pitman, Haddlesey, Ramos, Oddy, & Fortescue, 2015). Long-term effects of mild HI (mHI) are less apparent and attribution of functional changes, by the individual or others they interact with, are typically not associated with HI including impulsivity and aggression (NPHN, 2016). Persistent symptoms following mHI include headaches, fatigue, dizziness, anxiety, impaired memory and concentration, intolerance of stress, reduced processing speed, blurred vision and personality changes (Laborey et al., 2014). Studies using vignettes and checklists that explore the knowledge, symptoms and long-term consequences of HI in the general population report that knowledge of persisting symptoms is limited even in those with a history of mTBI (Mackenzie & McMillan, 2005; Mulhern & McMillan, 2006). The provision of information to improve HI knowledge has been recommended (Mckinlay, Bishop, & Mclellan, 2011).

HI is associated with violent offending (Fazel, Lichtenstein, Grann, & Långström, 2011) and repeated HI with a history of multiple custodial sentences (Raine et al., 2005). Anger and chronic problems with temper control are clinical problems associated with HI and skills training adapted from existing anger management programmes may facilitate individuals to develop an alternative adaptive skill set to manage frustration and conflict (Hart, Brockway & Maiuro, 2017). A systematic review identified aggression, irritability, agitation and alcohol and drug misuse as excessive disruptive primary behaviours associated with HI (Stéfan & Mathé, 2016). It is widely accepted that tolerance to

intoxicants is reduced after HI and combined with impulsive behaviours associated with HI this increases the likelihood of repeated HI and offending (NPHN, 2016). Hence education about head injury which incorporates the use of alcohol and drugs, aggression and impulsivity seems important in any brief intervention in a prison population. Programmes targeting dynamic risk factors tailored to individual characteristics of offenders can also be effective in reducing recidivism (Barnao & Ward, 2015).

A systematic review conducted by the author (see chapter 1) found no evidence evaluating the effectiveness of education programmes for prisoners with HI. Implementing effective interventions which facilitate prisoners to generate and translate knowledge improves their health (Kouyoumdjian et al., 2015). Brief educational interventions in a prison setting have been effective in increasing prisoner knowledge of opioid overdose (Pettersen & Madah-Amiri, 2017), HIV (Fish et al., 2008; Ko et al., 2009; Gupta et al., 2015) and hepatitis (Flühmann, Wassmer, & Schwendimann, 2012; Lehma, 2001).

There is a paucity of research evaluating interventions targeting knowledge and awareness of HI generally (Nygren-de Boussard et al., 2014) and little consideration has been given to development of resources despite the significant prevalence of HI in a prison population (Allely, 2016). This study will examine the effectiveness of a simple psychoeducation intervention that might be a suitable resource for delivery in prisons.

Aims and research question

The study explores what prisoners know about the effects and long term consequences of HI in addition to developing, delivering and measuring the effectiveness of a novel low cost education programme about the cause and effects of HI. It is hypothesised that:

Hypotheses

1. Knowledge about the effect of HI is greater in prisoners who self-report a history of HI than in those who do not.

2. The intervention will improve knowledge about the symptoms and long term effects of HI.

3. Knowledge about HI will be greater 1 month after the session than before.

4. The intervention will reduce self-reported aggression and impulsivity.

Methods

Ethical Approval

This project was approved by the NHS Research Ethics Committee, WOSREC 17-WS-0265 (appendix 2.2) and the Scottish Prison Service Ethics Committee, 12th October 2017, (appendix 2.3).

Study Site and Participants

The project was conducted on two sites; Her Majesty's Prison (HMP) Low Moss and Her Majesty's Prison and Young Offender Institute (HMPYOI) Grampian, serving the highest category of prisoners. HMP Low Moss has a capacity of 784 and manages adult male offenders typically from the North Strathclyde Community Justice Authority. HMPYOI Grampian houses over 500 prisoners and manages male and female, adult and young offenders typically from the North of Scotland Community Justice Authority. These sites were selected as both housed relatively stable prison populations and could accommodate the research study. Participants met with the researcher on an individual basis in private rooms on the residential halls or link centre and on a group basis in education rooms within the link centre. Study equipment included outcome measures, questionnaires, PowerPoint presentation and information booklet.

Design

The project is a quantitative, pre-post, within-subjects design measuring change in prisoners' knowledge of HI at three time points; pre-intervention (T1), post-intervention (T2) and one-month follow-up (T3). Self-reported ratings of aggression, hostility and inhibition were measured at T1 and T3. Prisoners' knowledge and self-reported ratings were compared between HI severity groups.

Eligibility Criteria

Participants were included if (i) male offenders aged 18 and over serving a custodial sentence, (ii) possessed basic literacy skills, (iii) fluent in English, (iv) were able to follow the concepts to provide consent, (v) no neurological degenerative disease or severe mental disorder.

Recruitment and Research Procedures

Recruitment posters (see appendix 2.3) were distributed within the prison halls by the peer support team at HMP Low Moss and SPS staff in HMP & YOI Grampian. Prisoners expressing an interest to take part completed a Participant notification of interest form (see

appendix 2.5) which were given to landing staff in HMP Low Moss and posted to NHS staff via the medical referral box in HMP & YOI Grampian. In HMP Low Moss the researcher collected the notice of interest forms and co-ordinated screening appointments which were conducted in a private room on the halls. In HMP Low Moss a list of prisoner names was collated in random order from the note of interest study forms. Participants were identified based on prisoners' willingness and availability to attend a screening appointment. Screening appointments in HMP & YOI Grampian were co-ordinated on behalf of the researcher by NHS and SPS staff and were conducted in a private room in the Link Centre. Screening appointments were conducted on a 1:1 basis with the researcher. Recruitment took place between February and May 2018 in accordance with SPS procedures. The researcher completed mandatory SPS induction training, Key Training and Personal Protection Training before undertaking research.

A 45 minute time slot was allocated for each screening appointment with the majority being completed in less than 25 minutes. The participant information sheet (appendix 2.6) was reviewed at the outset of the screening appointment and the researcher explicitly stated the study comprised three separate stages including a group intervention. Informed consent (appendix 2.7) was obtained prior to collection of any participant data, which was anonymised and stored as specified by university and NHS research protocol. Parameters of confidentiality were discussed with all participants. Demographic data including age, years of education, index offence and previous custodial sentences were captured on a study checklist (see appendix 2.8). Data on current substance misuse was not collected as participants were unlikely to provide accurate information given declaration of use would dictate that the researcher informed SPS staff as per prison protocol. HI severity was assessed using a validated screening tool (see Screening Measures). Participants' pre group knowledge about HI was captured using structured and unstructured measures (see Primary Outcome Measures) and their self-reported ratings of anger, hostility and inhibition were recorded using standardised measures (see Secondary Outcome Measures). The researcher offered participants the opportunity to ask any questions and enquired as to whether the screening appointment elicited any distress. One participant communicated concerns related to a recent HI and consented to the researcher notifying the NHS clinical psychologist at that site. Participants who completed the pre-group measures independently or were receptive to the provision of adaptive or additional support from the researcher to complete measures were considered to have met inclusion criteria to take part in the group. All participants except for one met eligibility criteria and intimated their

intention to attend the group. A list of study participants was forwarded to SPS staff for appropriate security checks to be completed and allocate participants to groups.

Within one-month of the screening appointment participants attended a one-hour interactive psychoeducation group delivered by the researcher (see Development of Educational Resources). After presenting the content of the psychoeducation group participants' post-group knowledge levels of HI were captured using the Primary Outcome Measures. All participants were issued with an information booklet entitled 'Helpful things to know about head injury' (see appendix 2.9) summarising the content of the psychoeducation group.

Follow-up appointments took place one-month after participants had attended a group and were conducted in the same format and 1:1 basis as the screening appointment. Participants' knowledge levels of HI were captured using the Primary Outcome Measures and self-reported ratings of anger, hostility and inhibition were recorded using the Secondary Outcome Measures. Follow-up appointments were co-ordinated by the researcher in conjunction with SPS staff.

Development of Educational Resources

The educational resources were developed for the study by the researcher under the supervision of a Professor in Clinical Neuropsychology from the University of Glasgow and Consultant Clinical Neuropsychologists from NHS Grampian. The content focussed on six topics; the effects of head injury on your brain, common causes of head injury, symptoms often occurring after head injury, the effect of drugs and alcohol after a head injury, head injury and recidivism, and reducing the likelihood of sustaining a head injury. De-escalation strategies were incorporated within the intervention. To ensure the overall design of the intervention remained low cost PowerPoint was used to create a presentation with accompanying facilitator notes (see appendix 2.10) and the information booklet. The group format was interactive and multi-modal to maximise engagement and learning consolidation which included group discussion, activities and foam brain models. Permission was obtained from the SPS to stream media clips.

Primary Outcome Measures

Measures of head injury knowledge

Unstructured and structured measures were used to collect data related to participants' knowledge about symptoms and long term effects of head injury and evaluate the effectiveness of the brief psychoeducation programme. An unstructured response measure

allows open ended responses to be generated and structured response measures have a limited set of possible answers to capture close ended responses.

Vignettes and Symptom Checklists

Previous research has been effective in assessing knowledge of HI using vignettes and symptom checklists (Mackenzie & McMillan, 2005) and an expert review concluded future research should use the authors' vignettes depicted in both studies (Sullivan, Edmed, & Cunningham, 2013). As such these vignettes were used as a template to develop study vignettes appropriate for a prison population. A total of three vignettes were created (see appendix 2.11) and presented at different time points to minimise repetition bias[2]. A symptom checklist (see appendix 2.12) was created listing persistent symptoms which are commonly reported after a mild HI (Laborey et al., 2014). Vignettes were completed prior to presentation of the symptom check list across all time points.

Secondary Outcome Measures

Measures of anger, hostility and inhibition

The Buss-Perry Aggression Questionnaire (BPAQ)

The BPAQ is a standardised measure comprised of four domains; physical aggression, verbal aggression, anger and hostility (Buss & Perry, 1992). The BPAQ has been found to show internal consistency, test/retest reliability and construct validity in offender populations (Bogner & Corrigan, 2009). A response sheet was created based on the 7-item Anger and 8-item Hostility sub scales and was used to measure self-reported levels of anger and hostility (see appendix 2.13).

The Frontal Systems Behaviour Scale (FrSBe)

The FrSBe is brief rating scale which is used to assess behaviour disturbances associated with disruption to frontal-subcortical circuits comprised of three subscales; apathy, disinhibition and executive dysfunction (Grace & Malloy, 2001) and has three parallel versions; self-report, family and professional. The disinhibition subscale of the self-report FrSBE has a Chronbach's Alpha of .80 (Bogner & Corrigan, 2009). A self-report scale was designed for the study based upon the self-report disinhibition subscale of FrSbe to capture prisoner's levels of impulsive responding (see appendix 2.14)[3].

[2] Pre-group; scenario 2, post-group; scenario 1 and follow-up; scenario 3
[3] The wording of item 27 was changed from 'trouble with the law' to 'trouble in the prison'

Screening Measures

The Ohio State University Traumatic Brain Injury Identification Method (OSU-TBI-ID)

The OSU-TBI-ID (see appendix 2.15) is a structured interview form designed to capture quantitative and qualitative self-report details of an individual's history of HI. Taking approximately 10 minutes to complete it has demonstrated reliability and predictive validity in prisons (Bogner & Corrigan, 2009) and is a cost-effective screening tool to assess history of TBI in prison populations (O'Rourke et al., 2016).

Justification of Sample Size

A brief intervention to improve knowledge of HI in a prison population was not identified. Alcohol, HI and offending are often associated. A meta-analysis comparing various brief interventions for alcohol across differing settings to control groups reported aggregated effect sizes in favour of the interventions (d= 0.14 to 0.67) and was used to estimate sample size (Moyer, Finney, Swearingen, & Vergun, 2002). If taking power of 0.80, probability to detect a medium-sized effect of 0.5 and $p < 0.05$, the sample size required using G*Power (Version 3.1) for a paired samples t-test was 26. Given the estimate was not based on a HI sample, a larger N of 50 was targeted, recruiting a maximum of 25 participants per site. This was considered feasible based on previous doctoral research conducted within the SPS (McGinley 2017). A one-tailed p value was used as the study hypotheses were directional predicting an improvement in outcomes.

Grouping Participants for Data Analysis

The duration of loss of consciousness (LoC) is used to define severity of HI; mild (LoC < 30 minutes) and moderate to severe HI (LoC >30 minutes) (Carroll, Cassidy, Holm, Kraus, & Coronado, 2004) and the same classification is used in the OSU-TBI-ID to distinguish between HI 'likely' or 'not likely' to result in persisting cognitive and behavioural consequences. For comparative purposes participants were grouped based on the most severe injury reported; participants who had not sustained a moderate or severe HI were allocated to the Mild HI group.

Scoring Vignette Responses

Two scores were calculated for participant knowledge as measured by their responses on the vignettes; score 1 was number of symptoms or effects of HI which corresponded with the forced choice responses from the symptom checklist. Score 2 was the number of

symptoms or effects of HI which corresponded with the symptom checklist or symptoms or consequences of HI listed in SIGN 110 and 130.

Data Analysis

Statistical analysis was undertaken using IBM SPSS version 21. Primary and secondary outcome measures were assessed for normality using the Kolmogorov-Smirnov Test. A repeated measures t-test was used to explore changes in primary and secondary outcome measures across all time points except for knowledge of symptoms at T1 to T3 which did not meet the assumptions of normality and was analysed using a Wilcoxon Signed Rank Test. An ANCOVA was conducted to assess the impact of severity of HI on knowledge levels at T2 with prior knowledge as a covariate. Assumptions for homogeneity of regression slopes and linear relationships between covariate and dependent variable were met for the symptom checklist and Vignette Score 1. Assumptions of linearity were violated for knowledge score 2 and the ANCOVA was conducted after reciprocal transformation was completed. A partial correlation was conducted to explore the relationships between number of HI and T2 scores when previous knowledge was controlled for.

Results

Recruitment

A total of 62 prisoners expressed interest in taking part in the study, of which 49 were offered a screening appointment and 36 attended[4]. Two participants were excluded at this stage; one was automatically excluded as they were under sentence protection[5] and one left the appointment after reporting that completing the outcome measures was stressful, leaving 34 participants successfully recruited to the study. A total of 20 participants attended the group however data was not captured for one participant who left mid-session due to an impromptu appointment. A total of 11 participants were available at follow-up[6]. Table 1 summarises recruitment in HMP Low Moss and HMP YOI Grampian.

Table 1 *Participant recruitment data at both study sites (N)*

Recruitment stage	**HMP Low Moss**	**HMP YOI Grampian**	**Total**
Noted interest in study	38	24	62
Offered screening appointment	25	24	49
Attended screening appointment	**25**	**11**	**36**
Attended group	16	4	20
Completed group	**15**	**4**	**19**
Attended follow-up appointment	**11**	**0**	**11**

Only 49 participants were offered a screening appointment as the research ethical approval was conditional of recruiting a maximum of 25 participants. A total of five groups were

[4] Non-attendance at screening and groups was influenced by individual factors including refusal, ill health, court attendance, work party or programme commitments and SPS systemic factors.
[5] Definition: A prisoner who has committed an offence, typically sexual, which places them at risk of harm from other prisoners.
[6] Attrition at follow up was solely attributable to liberation or SPS staff unavailable to support prisoner attendance at research meeting.

delivered by the researcher (see Figure 1) and the average duration between study time points is reported Table 2.

Figure 1 Group dates and participant attendance

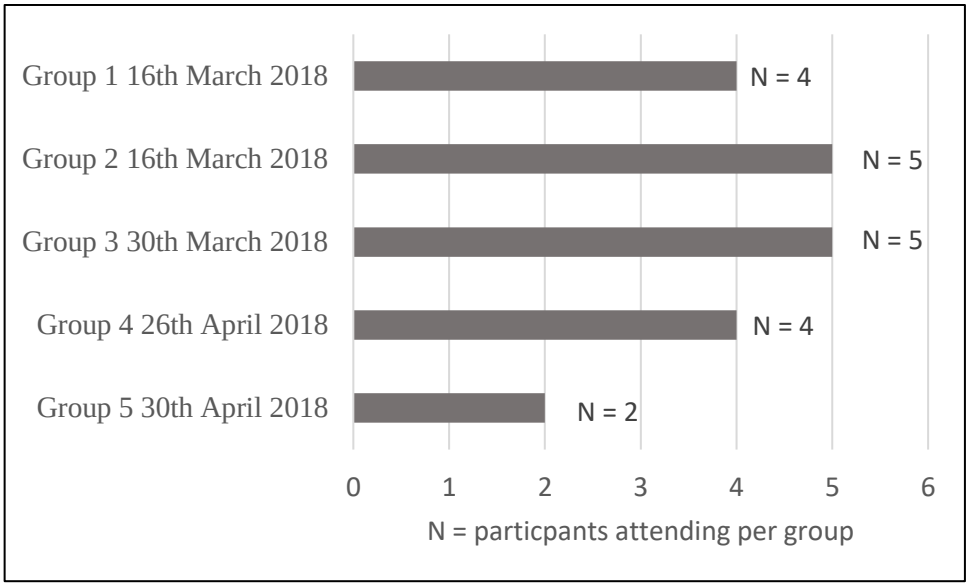

Table 2 *Average duration of days between study time points*

Time Point	Mean	Standard Deviation	Range
T1 to T2	20.79	14.84	4 - 53
T2 to T3	29.45	5.65	17 - 38
T1 to T3	45.00	11.63	35 - 73

Head Injury Characteristics

One participant did not complete the OSU-TBI-ID and was excluded from analysis of HI characteristics. Of the remaining 33 participants all reported sustaining a HI. The total number of HI reported by the 33 participants was 133. All but one participant sustained repeated HI; 13 (36%) had 2-3, 15 (46%) had 4-5, 4 (12%) had 6-7 and 1 (3%) had 11. Overall the mean number of HI was 4 and the range was 1 to 11. The severity of HI is reported in Table 3.

Table 3 *Head Injury Severity N (%)*

Mild no Loss of Consciousness / Mild with Consciousness <30 minutes	20 (60.6)
Moderate-Severe Consciousness > 30 minutes	13 (39.4)

More than half of the HI were caused by violence (N = 70, 52%) and one of these was related to physical abuse. Other reported causes were falls (N = 29, 22%), road traffic accidents (N = 20, 15%), sport (N = 5, 4%), explosion (N = 5, 4%) and striking head off an object (N = 4, 3%). Based on the OSU-TBI-ID interpretation criteria, 28 (85%) participants were 'likely' to experience persisting cognitive and behavioural consequences.

Demographics and Offending History

All participants were of white ethnicity. Five were serving their first custodial sentence. As 7 of the remaining 29 participants reported being unable to recall the exact number of custodial sentences they provided an approximation. The number of previous custodial sentences are reported as ranges (see Table 4).

Table 4 *Demographic and offending history of all participants and by severity of HI*

		Mild HI N=20*	**Mod/Severe HI N=13***	**All participants N=34**
Age M, (SD) and range		36.3 (12.0) 23 to 66	39.2 (9.7) 21 to 51	37.5 (10.9) 21 to 66
Years of education M, (SD) and range		11.5 (2.81) 7 to 19	10.5 (2.93) 6 to 18	11.2 (2.8) 6 to 19
Number of previous convictions N (%)	None	4 (20%)	1 (8%)	5 (15%)
	1 to 5	9 (45%)	8 (61%)	18 (53%)
	6 to 10	3 (15%)	1 (8%)	4 (12%)
	>10	4 (20%)	3 (23%)	7 (20%)
Violent index offence N (%)		11 (55%)	7 (54%)	18 (53%)
Non-Violent index offence N (%)		9 (45%)	6 (46%)	16 (47%)

**N = 33 for total HI data as severity was unknown for one participant*

Primary and secondary outcome measures

Vignettes

The total number of HI symptoms corresponding to the checklist (score 1) was significantly greater at T2 (t (df=18) = 3.47 p=.003; *d* = 0.91, 95% CI [0.36, 1.46]) and T3 (t (df=10) = 3.40 p=.007; *d* = 1.27, 95% CI [0.44, 2.11]) than at T1. There was no significant difference in the total number of symptoms at T2 and T3 (t (df=10) = -0.43) p=0.68).

Knowledge of HI symptoms included in the checklist or SIGN guidelines (score 2) was significantly greater at T2 (t (df=18) = 3.40 p=.003; *d* = 0.99, 95% CI [0.38, 1.60]) and T3 (z = -2.84, N – Ties = 10, p=0.005; *r* = 0.60) than at T1. There was no significant difference in the total number of symptoms reported from T2 to T3 (t (df=10) = -0.61 p=0.55).

Symptom checklist

When assessing knowledge using the symptom checklist there was no significant increase in the total number of symptoms from T1 to T2 (t (df=18) = 1.12 p=0.28), T2 to T3 (t (df=10) = -0.22 p=0.83) or T1 to T3 (t (df=10) = 1.52 p=0.16).

Self-reported anger, hostility and inhibition

There were no significant differences between self-report of anger (t (df=10) = 1.63 p=0.13), hostility (t (df=10) = -0.03 p=0.98) or inhibition (t (df=10) = -0.11 p=0.92) between T1 and T3.

Table 5 *Participant scores for primary and secondary outcome measures across study time points M (SD)*

Measure	**T1** **N=34**	**T2** **N=19**	**T3** **N=11**
Vignette: score 1	1.71 (1.90)	3.00 (2.08)	3.36 (1.03)
Vignette: score 2	1.88 (2.11)	4.16 (3.27)	4.73 (1.79)
Symptom check list	7.59 (4.86)	8.37 (4.61)	9.36 (3.23)
Anger	24.35 (9.80)	-	25.36 (10.61)
Hostility	25.59 (12.73)	-	22.09 (10.57)
Inhibition	35.85 (8.64)	-	34.73 (6.45)

Knowledge and head injury severity

The total number of symptoms corresponding with the symptom checklist (vignette score 1) was significantly greater for Mild HI than Moderate-Severe HI groups at T1 (t(1,30)= 2.07; p= .047) but did not differ at T2 (t (1,16)= 1.47; p= .161). After adjusting for knowledge of HI (score 1) at T1 there remained no difference between these HI severity groups at T2 ($F(1, 16) = 1.35$, $p=0.26$, partial eta squared = .078).

Total number of symptoms included in the checklist or SIGN guidelines (vignette score 2), was of borderline significance between Mild and Moderate-Severe HI groups at T1 (t(1,30)= 1.86; p= .07) and non-significant at T2 (t(1,16)= 1.05; p= .31). After adjusting for knowledge of HI (score 2) there remained no difference between these HI severity groups at T2 (F (1, 8) = 0.05, p=0.82, partial eta squared = .003).

Relationships between number of HI and T2 scores were investigated using correlation with previous knowledge (T1) partialled out. No significant effect was found for the symptom checklist ($r_{partial}$ (17) = -0.02; p = 0.92) vignette score 1 ($r_{partial}$ (17) = 0.17; p = 0.50 or vignette score 2 ($r_{partial}$ (17) = 0.11; p = 0.65).

Knowledge and HI severity were not analysed at T3 as the total sample size at this time point was small (N=11) due to high attrition which decreased further when participants were grouped based on HI severity, therefore statistical analysis was not completed. Descriptive between groups data is reported in Table 6.

Table 6 *Participant knowledge scores M (SD) grouped by HI severity across study time points*

Time	**T1**		**T2**		**T3**	
Severity	**Mild N=20**	**Mod/Sev N=13**	**Mild N=13**	**Mod/Sev N=6**	**Mild N=8**	**Mod/Sev N=3**
Vignette Score 1	2.20 (2.22)	1.00 (1.08)	3.46 (2.22)	2.00 (1.41)	3.50 (1.07)	3.00 (1.00)
Vignette Score 2	2.40 (2.39)	1.15 (1.46)	4.69 (3.73)	3.00 (1.67)	5.13 (1.81)	3.67 (1.53)

Discussion

This study explored what prisoners know about the effects and long-term consequences of HI and whether a novel low-cost psychoeducational programme could increase knowledge of HI. A single one-hour education session increased knowledge about HI and this persisted for at least four weeks. Previous research exploring the effectiveness of a single session intervention to improve knowledge of HI in prisoners has not been conducted. These findings are consistent with the small number of single session group studies which increased prisoner knowledge of communicable diseases (Fish et al., 2008; Ko et al., 2009; Lehma, 2001). All participants in the present study had sustained a HI and all but one sustained repeated HI.

Measures of knowledge

Higher scores captured by checklists as opposed to vignettes are consistent with the findings of Mackenzie and McMillan (2005). The checklist potentially elicited responses participants would not have recalled without a cue although Mackenzie and McMillan (2005) suggested responses were attributed to guessing as opposed to recognition. Differences between knowledge of participants with mHI and Moderate-Severe HI indicated that knowledge levels were moderately higher for participants with mHI. Analysis of the data with a larger sample size would explore whether the small between-group differences observed in the data were of significance. The mean scores reflect a trend of increasing numbers of symptoms in both groups suggesting that the intervention has modest effects for all participants irrespective of HI severity.

Measures of aggression and inhibition

Self-reported aggression and impulsivity did not reduce following the intervention. Within the SPS criminogenic needs are prioritised, however there is debate around whether these should be prioritised above an individual's psychological needs (Barnao & Ward, 2015). In the SPS prisoners are assessed to identify appropriate offender management programmes to meet their needs. This includes the Self Change Programme which addresses offending behaviour, aggression and impulsivity and is underpinned by models known to reduce recidivism (Ward & Maruna, 2007). These are of lengthy duration, lasting 6 to 8 months and hypothesising that a brief intervention would improve aggression and impulsivity is ambitious.

Limitations

Several key limitations to the study were linked to study design. These included personal bias and lack of blinding as the researcher developed and designed the intervention and was sole assessor of outcome measures therefore was aware of all pre-scores. These limitations were attributable to time and resource parameters of conducting the study which also dictated the use of a pre-post design as opposed to a controlled design to investigate effectiveness. In the absence of a controlled design, confounding factors such as participants sharing their knowledge after attending the group with other prisoners or conducting personal research about HI once recruited to the study, may have contributed to the increase in knowledge scores as opposed to the content of the intervention. The self-report disinhibition subscale was selected as a measure based on time constraints of completing the research therefore inferences cannot be made as to whether there was change in self-reported inhibition levels given the full version of the FrSBe was not completed. The same caveat is applicable when interpreting the results of the self-reported levels of aggression and hostility as only subscales were used from the full version of the BPAQ. As information regarding substance misuse was not gathered it is unclear whether this is a confounding factor in relation to levels of aggression and hostility. Furthermore, identification of HI was reliant on self-report alone and the presence of HI should be corroborated with hospital records (McKinlay, Horwood, & Fergusson, 2016) therefore severity of HI may be inaccurate and should be considered when interpreting the results.

Overall the sample size was modest. It should be acknowledged that sample size was limited as not all prisoners who expressed interest in the study were recruited, as ethical approval was granted based on a maximum recruitment of 25 participants per study site, which otherwise had potential to increase sample size to N = 62. Attrition rates in the study were high between T1 and T2, the majority of which was attributed to participants declining to attend the group. This is reflective of attrition rates in brief interventions conducted with larger sample sizes (Gupta et al., 2015). There was also a high attrition rate between T2 and T3 which was attributed to participants being liberated from prison or SPS factors as opposed to participant characteristics. Nonetheless, given that prisoners who were liberated were not contacted to obtain follow up data and the lack of SPS staff to conduct the research at T3, the absence of this data in the analysis means that the reported data may present an inflated impression of effectiveness. In addition, given the small sample size at T3 interpretation about whether the intervention is effective in knowledge retention over time should be considered with caution.

Environmental factors impacted on the practicalities of conducting the research. No follow-up data was gathered at HMP YOI Grampian due to lack of staff availability which otherwise had potential to increase final follow-up to N = 15. In both prisons, groups were conducted in the Link Centres, where prisoners can access facilities to address re-offending, obtain education and deal with matters related to employment, housing and social work. Anecdotal evidence from prisoners suggested that many fellow prisoners avoid the Link Centre as they become 'stuck' for a morning as they cannot return to the halls until there is a route move. The route move is specific timeframe which occurs throughout the daily prison timetable to manage risk associated with escorting prisoners to and from halls to other areas within the prison. Other speculations were that many prisoners dislike the open areas of the Link Centre and having to interact with prisoners from the entire prison as opposed to those from their section or hall. One prisoner reported that fellow peers did not attend due to prison protocol that states prisoners leaving the halls must change out of their own attire and wear SPS clothing. Officers and prisoners also reported that declining participation presented an opportunity to defy requests of prison staff without consequence. Negative relationships with frontline prison staff are considered a barrier to conducting research (Frank Terry, Praetorius, & Nordberg, 2018). Other SPS factors which impacted across all time points in the study were prisoners attending court, hospital appointments, education or work parties and forensic programmes. On occasion, critical risk incidents in the prison prevented the researcher from accessing facilities to meet with participants.

Clinical implications & future directions

As the current study recruited participant N based on the sample size calculation for the purpose of statistical power, future studies should aim to recruit a greater number of participants to address the high attrition rates. Participant note of interest forms should state 'You may or may not be contacted to take part in this study' to reduce ambiguity about participation. Improvements to T1 are designing an additional consent form to capture data in order to contact participants for follow up data once liberated. Although screening appointments took place in mornings, afternoons and evenings the note of interest form could also have a section for prisoners to indicate a preferred screening period in the day, which would also be informative for scheduling follow up sessions. Improvement to T2 is using alternative venues to deliver the group such as the group rooms on the halls in HMP Low Moss which are utilised on the halls for smoking cessation groups. The information booklet given to participants at the end of the group could be developed into a self-help format booklet for distribution within the prison to widen access

to the intervention to prisoners who decline attendance whilst providing additional support to those who do. Adapted self-help materials for prisoners can have a positive impact on symptoms (Maunder et al., 2009). Although no formal evaluation of the group was conducted many informally reported it was beneficial, stating the information contained in the intervention fitted with their own symptoms and experiences following HI. Therefore having a participant evaluation and feedback form completed at the end of the group would inform development of future groups whilst potentially address the needs of prisoners amongst inherent challenges of health promotion in prison (Woodall, 2016). One participant suggested embedding the group as a session in existing forensic programmes. In addition, running the brief education group to increase prison staff knowledge about the effects of HI may be beneficial as officers may perceive behaviour which is a consequence of HI as defiant and in the longer term decrease negative interactions (Pitman et al., 2015). This may also increase participant numbers as a greater staff awareness may encourage officers to motivate participants to attend the group. Providing education to prisoners and staff can improve understanding and management of HI in a prison population.

Conclusions

This is the first brief intervention group for HI to be conducted in prison setting and preliminary findings suggest that the intervention is effective in improving knowledge of HI but not levels of aggression and hostility. The study sample was representative of the high prevalence rates of HI in a prison population. This research demonstrates that a single one-hour session can be successfully delivered within a prison environment using resources which are cost-effective and targets a relevant population whose needs are not currently met within the SPS.

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Systematic Review Appendices

Appendix 1.1 Author guidelines for submission to Journal of Correctional Health Care

Information for Authors

The only national, peer-reviewed scientific journal to address correctional health care topics, the *Journal of Correctional Health Care*'s mission is to inform professionals in this field of important trends and developments. *JCHC* welcomes original manuscripts that report empirical research findings, review the literature in an area of interest, or qualitatively describe case studies or best practices related to common problems in correctional settings. Other contributions may include reviews of recent publications addressing correctional health or related fields and personal essays on correctional health topics.

Editorial Policies

To ensure that *JCHC* meets the highest standards, its editorial policies are based on the editorial policy statements of the Council of Science Editors in CSE's White Paper on Promoting Integrity in Scientific Journal Publications. These policies address the following areas:

- Editor Roles and Responsibilities (e.g., editorial freedom; confidentiality; conflicts of interest and disclosure; editorial board participation; timeliness of the publication process; errata, retractions, and expressions of concern; authorship disputes; appeals for reconsideration of rejected manuscripts; allegations or findings of misconduct)
- Authorship and Author Responsibilities (authorship and contributorship models and criteria; acknowledgments, order of authors, changes to the author byline, author responsibilities [e.g., confidentiality, originality, disclosures, copyright assignment, permissions, multiple submissions, public access requirements of funding agencies, human subjects research])
- Reviewer Roles and Responsibilities (reviewer selection, ethical responsibilities of reviewers, reviewer impropriety, use of anonymous reviewers)
- Sponsor Roles and Responsibilities (authorship/contributorship, process control [content and journal selection], disclosure of funding sources and sponsor involvement, access to and provision of data, copyright, sponsor conduct and ethical practices, trial registration and dissemination of findings)
- Relations Between Editors and Publishers, Sponsoring Societies, or Journal Owners
- Responsibilities to the Media

In addition, authors are expected to adhere to *JCHC* policies governing manuscript development, review, and publication. These policies are based on the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals, promulgated by the International Committee of Medical Journal Editors (ICMJE). The ICMJE Recommendations address the following areas:

- Roles and Responsibilities of Authors, Contributors, Reviewers, Editors, Publishers, and Owners (e.g., defining the role of authors and contributors, conflicts of interest, the peer review process, editorial freedom, protection of research participants and more)
- Publishing and Editorial Issues Related to Publication in Medical Journals (e.g., corrections and version control, scientific misconduct, retraction, copyright, overlapping publications, correspondence, fees, electronic publishing and more)
- Manuscript Preparation and Submission

Although not all of the CSE policy statements and ICMJE requirements pertain to *JCHC*, they do address general expectations. Consult the complete policy statements and URMs online at, respectively, http://www.councilscienceeditors.org (see White Paper on Publication Ethics) and http://www.icmje.org.

Authors must submit a statement indicating that the manuscript has not been published previously and will not be submitted to another journal until after notification is received from *JCHC*. The editor assumes that articles from a particular institution are submitted with appropriate approval. Authors must disclose real or potential conflicts of interest, including corporate financial or material support. The *Journal*'s editorial policies and instructions for manuscript preparation and submission also are available online at http://www.ncchc.org/ and at http://journals.sagepub.com/home/jcx.

Review Process

The corresponding author will receive notice after the manuscript is received. Manuscripts are subject to blind peer review by at least two correctional health experts. Authors will be notified of the review process results in 3 to 6 months. All manuscripts will be edited to conform to *JCHC*'s standards and style.

Manuscript Preparation and Submission

Prepare manuscripts, including references, using the style and standards specified in the *Publication Manual of the American Psychological Association*, 6th edition (APA). Submit the manuscript via SAGE Track http://mc.manuscriptcentral.com/jcx. Hard copy and email submissions are not accepted. Limit manuscript length to approximately 15 pages or 5,000 words, excluding supporting materials such as figures.

Title page includes names of all authors, their credentials, institutional affiliations, and mailing addresses, as well as phone numbers and email addresses of the lead and corresponding authors (if not the same). Omit author names from all subsequent pages. Acknowledgments of credit and research support appear in a footnote. Information about conflicts of interest appears on a separate page. A concise, summary abstract of no more than 125 words precedes the introduction and is followed by four or five keywords.

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If tables or figures are used, label them using arabic numbers. Indicate in the manuscript the appropriate position for each table or figure and place them at the end of the manuscript. Submit figures in editable format in black and white only (if color is desired, fees will apply). Format tables as simply as possible (e.g., using tabs, not the table command, in a word processing document, not a spreadsheet). For best print quality, submit images as high-resolution (minimum 300 dpi) black-and-white files in eps, jpg, tif, or pdf formats.

References listed at the end of the article must be cited in the text, and any reference mentioned in the text must appear in the reference list. References must follow APA style.

Submit the manuscript via SAGE Track at http://mc.manuscriptcentral.com/jcx.

Journal of Correctional Health Care

Checklist for Authors

__ Letter of submission

__ Curriculum vitae for lead author

__ Conflict of interest statement from all authors

__ Original manuscript in digital format

__ Title page with author contact information, credentials, affiliations, and acknowledgments

__ Abstract of 125 words maximum, plus 4 or 5 keywords

__ References (APA Style, 6th edition)

__ Tables with legends (on separate pages at the end of the manuscript)

__ Figures/illustrations with legends (in editable digital format or camera-ready)

__ Documentation of reprint permission, if applicable; see permission guidelines at https://us.sagepub.com/en-us/nam/copyright-and-permissions

__ Journal Contributor Publishing Agreement (after manuscript acceptance)

If you or your funder wish your article to be freely available online to nonsubscribers immediately upon publication (gold open access), you can opt for it to be included in SAGE Choice, subject to the payment of a publication fee. The manuscript submission and peer review procedure is unchanged. On acceptance of your article, you will be asked to let SAGE know directly if you are choosing SAGE Choice. To check journal eligibility and the publication fee, please visit SAGE Choice. For more information on open access options and compliance at SAGE, including self/author archiving deposits (green open access) visit SAGE Publishing Policies on our Journal Author Gateway.

Appendix 1.2 Risk of bias results from second rater

Study		Methods for selecting study participants	Methods for assessing study variables		Design specific confounders		Methods to control confounding	Design and analysis plan
			Assessment Measures	Control Group	Local prison population	Wider prison population		
1.	**Fish et al., 2008**	**High**	Low	Low	Low	High	Low	Low
3.	**Ko et al., 2009**	High	Low	High	High	High	Low	Low
4.	**Petterson & Madha-Amiri, 2017**	Low	Low	High	Low	Low	High	Low

Appendix 1.3 Reference list of articles cited in Table 3 Characteristics of Reviewed Studies

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Major Research Project Appendices

Appendix 2.1 Author guidelines for publishing in Criminology and Criminal Justice

1. What do we publish?

1.1 Aims & Scope

Before submitting your manuscript to Criminology & Criminal Justice, please ensure you have read the Aims & Scope.

1.2 Article Types

Criminology & Criminal Justice publishes work of the highest quality and academic rigour from around the world and across all areas of criminology and criminal justice. It is interdisciplinary in nature and is devoted to providing an international forum for critical debate and policy discussions of criminological and criminal justice research findings. As the official journal of the British Society of Criminology, Criminology & Criminal Justice encourages the submission of articles that are of interest to an international and/or British readership.

Some of the key types of articles which form the focus of the journal will include:

- original conceptual articles on crime, its prevention and control;
- empirical studies, including those of criminological research findings, criminal justice policy-making and the implementation of laws, processes and criminal justice;
- analyses of crimes and criminal justice institutions and policy transfer, as well as evaluations of significant developments in criminal justice practices;
- debates about the public role of criminology and criminologists.

Submissions to Criminology & Criminal Justice should be written in English *and should not have been published already, nor be currently under consideration elsewhere*. If you have authored any other papers published, in press, or submitted to other journals that are closely related to the submitted paper, such as those using the same data set, deriving from the same research or addressing a similar topic you will be asked to acknowledge this at time of submission. You will be asked to state how the submitted manuscript differs from the other papers and what its specific contributions are. You may also be required to provide the editors with electronic copies of any such papers.

1.3 Writing your paper

The SAGE Author Gateway has some general advice and on how to get published, plus links to further resources.

1.3.1 Make your article discoverable

When writing up your paper, think about how you can make it discoverable. The title, keywords and abstract are key to ensuring readers find your article through search engines such as Google. For information and guidance on how best to title your article, write your abstract and select your keywords, have a look at this page on the Gateway: How to Help Readers Find Your Article Online.

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2. Editorial policies

2.1 Peer review policy

All manuscripts are reviewed initially by the Editors and only those papers that meet the academic and editorial standards of the journal, and fit within the aims and scope of the

journal, will be sent for outside review. Criminology & Criminal Justice operates a strictly blinded peer review process in which the reviewer's name is withheld from the author and the author's name from the reviewer. Submissions are reviewed by at least two reviewers.

2.2 Authorship

All parties who have made a substantive contribution to the article should be listed as authors. Principal authorship, authorship order, and other publication credits should be based on the relative scientific or professional contributions of the individuals involved, regardless of their status. A student is usually listed as principal author on any multiple-authored publication that substantially derives from the student's dissertation or thesis.

2.3 Acknowledgements

All contributors who do not meet the criteria for authorship should be listed in an Acknowledgements section. Examples of those who might be acknowledged include a person who provided purely technical help, or a department chair who provided only general support.

Any acknowledgements should appear first at the end of your article prior to your Declaration of Conflicting Interests (if applicable), any notes and your References.

2.4 Funding

Criminology & Criminal Justice requires all authors to acknowledge their funding in a consistent fashion under a separate heading. Please visit the Funding Acknowledgements page on the SAGE Journal Author Gateway to confirm the format of the acknowledgment text in the event of funding, or state that: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

2.5 Declaration of conflicting interests

Criminology & Criminal Justice encourages authors to include a declaration of any conflicting interests and recommends you review the good practice guidelines on the SAGE Journal Author Gateway.

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3. Publishing Policies

3.1 Publication ethics

SAGE is committed to upholding the integrity of the academic record. We encourage authors to refer to the Committee on Publication Ethics' International Standards for Authors and view the Publication Ethics page on the SAGE Author Gateway.

3.1.1 Plagiarism

Criminology & Criminal Justice and SAGE take issues of copyright infringement, plagiarism or other breaches of best practice in publication very seriously. We seek to protect the rights of our authors and we always investigate claims of plagiarism or misuse of published articles. Equally, we seek to protect the reputation of the journal against malpractice. Submitted articles may be checked with duplication-checking software. Where an article, for example, is found to have plagiarised other work or included third-party copyright material without permission or with insufficient acknowledgement, or where the authorship of the article is contested, we reserve the right to take action including, but not limited to: publishing an erratum or corrigendum (correction); retracting the article; taking up the matter with the head of department or dean of the author's institution and/or relevant academic bodies or societies; or taking appropriate legal action.

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4. Preparing your manuscript for submission

4.1 Formatting

The preferred format for your manuscript is Word. LaTeX files are also accepted. Word and (La)Tex templates are available on the Manuscript Submission Guidelines page of our Author Gateway.

Submissions to Criminology & Criminal Justice may not normally exceed 8,000 words. The word count includes all text, including but not limited to, the abstract, main body, notes, acknowledgements, tables, figures, and references. Over-lengthpapers may be returned without being put through the peer review process.
The text should be double-spaced throughout and with a minimum of 3cm for left and right hand margins and 5cm at head and foot. Text should be standard 10 or 12 point. All pages should be numbered. Titles and section headings should be clear with a maximum of three orders of heading.

Please prepare your submission in two separate files:
- complete manuscript (including title, an abstract of no more than 150 words, 4-6 keywords, a final word count, as well as the author's full name, affiliation, institutional and email address, telephone and fax numbers, and a short biography for each author of 25-50 words). For further information see section 9.4.1 and 9.4.4 below.
- anonymized manuscript (title, the main body of text, footnotes, tables, and figures). This document must be blinded and suitable for viewing by reviewers. Manuscripts that include direct references to the author (including references to publications) may be returned without being put through the peer review process.

4.2 Artwork, figures and other graphics

For guidance on the preparation of illustrations, pictures and graphs in electronic format, please visit SAGE's Manuscript Submission Guidelines.

Figures supplied in colour will appear in colour online regardless of whether or not these illustrations are reproduced in colour in the printed version. For specifically requested colour reproduction in print, you will receive information regarding the costs from SAGE after receipt of your accepted article.

4.3 Supplementary material

Criminology & Criminal Justice does not currently accept supplemental files.

4.4 Reference style

Criminology & Criminal Justice adheres to the SAGE Harvard reference style. View the SAGE Harvard guidelines to ensure your manuscript conforms to this reference style.

If you use EndNote to manage references, you can download the SAGE Harvard EndNote output file.

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Authors seeking assistance with English language editing, translation, or figure and manuscript formatting to fit the journal's specifications should consider using SAGE Language Services. Visit SAGE Language Services on our Journal Author Gateway for further information.

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5. Submitting your manuscript

Criminology & Criminal Justice is hosted on SAGE Track, a web based online submission and peer review system powered by ScholarOne™ Manuscripts. Visit http://mc.manuscriptcentral.com/ccj to login and submit your article online.

IMPORTANT: Please check whether you already have an account in the system before trying to create a new one. If you have reviewed or authored for the journal in the past year it is likely that you will have had an account created. For further guidance on submitting your manuscript online please visit ScholarOne Online Help.

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6. On acceptance and publication

6.1 SAGE Production

Your SAGE Production Editor will keep you informed as to your article's progress throughout the production process. Proofs will be sent by PDF to the corresponding author and should be returned promptly. Authors are reminded to check their proofs carefully to confirm that all author information, including names, affiliations, sequence and contact details are correct, and that Funding and Conflict of Interest statements, if any, are accurate. Please note that if there are any changes to the author list at this stage all authors will be required to complete and sign a form authorising the change.

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7. Further information

Any correspondence, queries or additional requests for information on the manuscript submission process should be sent to the Criminology & Criminal Justice editorial office as follows:

ccj-journal@glasgow.ac.uk

Appendix 2.2 NHS Ethics

WoSRES

West of Scotland Research Ethics Service

Professor Tom McMillan
Research Director
University of Glasgow
Mental Health and Wellbeing West Glasgow Ambulatory Care Hospital Royal Gartnavel Hospital Dalnair Street
Glasgow
G12 0XH

West of Scotland REC 3
Research Ethics
Clinical Research and Development
Glasgow
G3 8SJ
(Formerly Yorkhill Childrens Hospital)

Date 19 January 2018 Direct line 0141 232 1807
E-mail
WoSREC3@ggc.scot.nhs.uk

Dear Professor McMillan

Study title: **Is prisoner's knowledge about head injury improved following a brief psychoeducation programme?**
REC reference: **17/WS/0265**
IRAS project ID: **234586**

Thank you for your letter of 19 January 2018. I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 21 December 2017

Documents received

The documents received were as follows:

Document	*Version*	*Date*
Copies of advertisement materials for research participants [Recruitment Poster]	V3	08 January 2018
Participant consent form [Participant Consent Form]	V4	08 January 2018
Participant information sheet (PIS) [Participant Information Sheet]	V3	08 January 2018
Response to Additional Conditions Met [REC cover letter 17 WS 02 65 V1 18.01.18]		19 January 2018

Approved documents

The final list of approved documentation for the study is therefore as follows:

Document	*Version*	*Date*
Copies of advertisement materials for research participants [Recruitment Poster]	V3	08 January 2018
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [University of Glasgow Evidence of Insurance]		27 July 2017
Document	*Version*	*Date*
Interview schedules or topic guides for participants [participant information booklet]	V3	12 November 2017
Interview schedules or topic guides for participants [Helpful Things To Know About Head Injury]	V4	23 November 2017
IRAS Application Form [IRAS_Form_28112017]		28 November 2017
Letters of invitation to participant [Participant notification of interest in study]	V1	28 November 2017
Non-validated questionnaire [Vignette Scenario and Response Sheet]	V2	23 November 2017
Non-validated questionnaire [Self Report Inhibition Rating Scale]	V2	22 November 2017
Other [HA CV]		17 October 2017
Participant consent form [Participant Consent Form]	V4	08 January 2018
Participant information sheet (PIS) [Participant Information Sheet]	V3	08 January 2018
Research protocol or project proposal [Research protocol]	V13	10 November 2017
Response to Additional Conditions Met [REC cover letter 17 WS 02 65 V1 18.01.18]		19 January 2018
Summary CV for Chief Investigator (CI) [CI and Supervisor's Summary CV]	September 2017	
Summary CV for student [Louise Buchan CV]		
Validated questionnaire [Buss Perry Response Sheet V2 22.11.17]	V2	22 November 2017
Validated questionnaire [OSU-TBI-ID]		

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

17/WS/0265	**Please quote this number on all correspondence**

Yours
sincerel
y

Abibat Adewumi

Abibat Adewumi-Ogunjobi
REC Manager

Copy to: *Ms Emma-Jane Gault*
Ms Elaine O'Neill, NHS Greater Glasgow & Clyde

Appendix 2.3 Scottish Prison Service Ethics

FW: Head Injury and Offending

Tom McMillan

Fri 02/02/2018 10:57

To:Louise Dianne Buchan <l.buchan.1@research.gla.ac.uk>;

Dear Louise

See below –SPS approval for your project

Tom McMillan MApp Sci PhD FBPSs
Professor of Clinical Neuropsychology
Institute of Health and Welllbeing
University of Glasgow
0141 211 0354

From: Carnie James [mailto:James.Carnie@sps.pnn.gov.uk]
Sent: 12 October 2017 11:50
To: Tom McMillan <Thomas.McMillan@glasgow.ac.uk>
Cc: Porter John (HEALTHCARE IMPROVEMENT SCOTLAND - SD039) (john.porter1@nhs.net) <john.porter1@nhs.net>; Parker Ruth <Ruth.Parker@sps.pnn.gov.uk>; Christie Emma <Emma.Christie@sps.pnn.gov.uk>
Subject: RE: Head Injury and Offending

Tom

RAEC met yesterday and was content to approve access for the women in custody and brain injury proposal and also for the second proposal on the effectiveness of a brief education programme on brain injury for prisoners.

Can you please sign our standard access conditions and return (either electronically or hard copy).

Thanks
Jim

From: Tom McMillan [mailto:Thomas.McMillan@glasgow.ac.uk]

Sent: 25 September 2017 12:09
To: Carnie James <James.Carnie@sps.pnn.gov.uk>

Cc: Porter John (HEALTHCARE IMPROVEMENT SCOTLAND - SD039) (john.porter1@nhs.net)

<john.porter1@nhs.net>; Parker Ruth
<Ruth.Parker@sps.pnn.gov.uk> Subject: RE: Head Injury and
Offending

Dear Jim

I attach an updated version of the women and brain injury in prisons proposal and also a second separate proposal which is looking at the effectiveness of a brief education programme on brain injury for prisoners.

Hopefully both are in time for the ethics meeting in October. Both reflect research recommendations from the BI and Offending report to SG.

Best wishes

Tom McMillan
Professor of Clinical Neuropsychology
Institute of Health and Wellbeing
University of Glasgow
Tel: +44 (0)141 211 0354

Appendix 2.4 Recruitment Poster

University of Glasgow | College of Medical, Veterinary & Life Sciences

NHS Greater Glasgow and Clyde

RECRUITING:

HELPFUL WAYS OF LOOKING AFTER YOUR HEAD AND BRAIN

WE ARE TRYING TO UNDERSTAND WHAT PRISONERS KNOW ABOUT HEAD INJURY AND THE LONG-TERM EFFECTS.

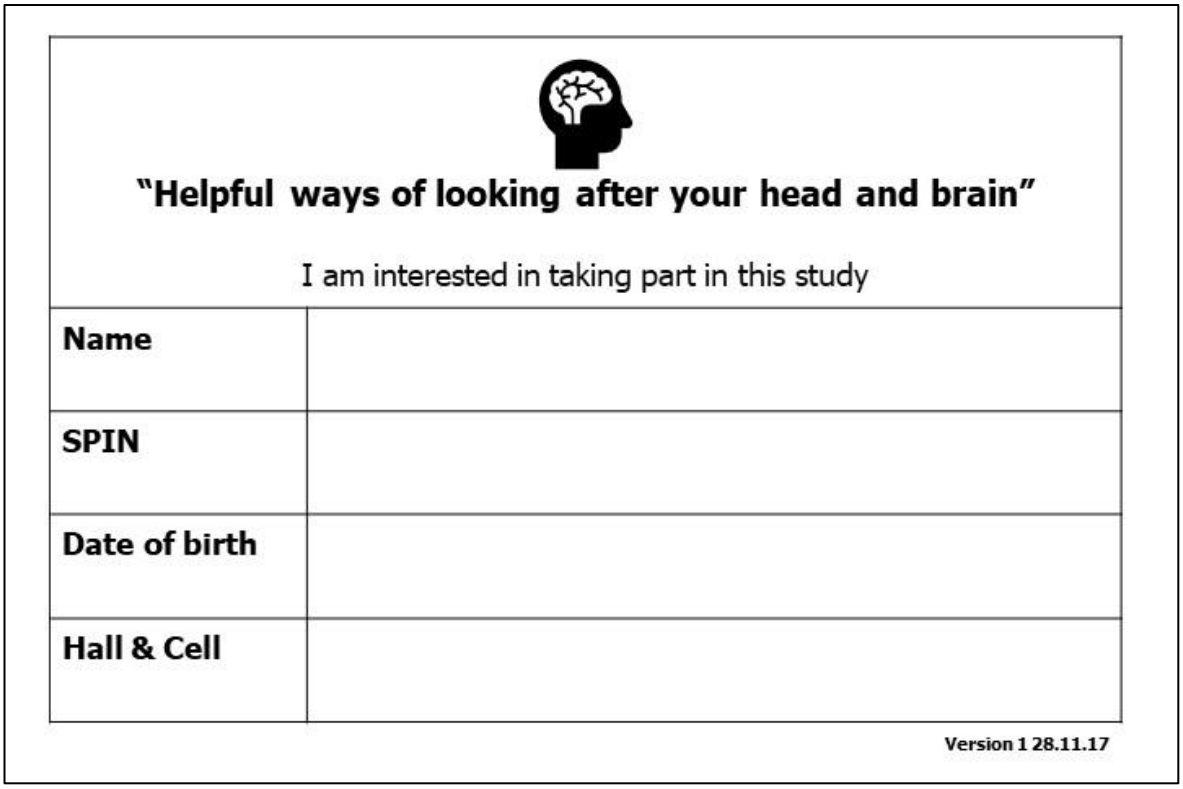
THIS STUDY IS OPEN TO ALL SERVING A SENTENCE WITHIN THE PRISON.

DO YOU HAVE ABOUT 2 HOURS TO SPARE?

PLEASE TAKE A PARTICIPANT INFORMATION SHEET AND SPEAK TO A STAFF MEMBER IF YOU ARE INTERESTED.

Version 3
8th January 2018

Appendix 2.5 Participant Notification of Interest Form



"Helpful ways of looking after your head and brain"

I am interested in taking part in this study

Name	
SPIN	
Date of birth	
Hall & Cell	

Version 1 28.11.17

Appendix 2.6 Participant Information Sheet

University of Glasgow | College of Medical, Veterinary & Life Sciences

NHS Greater Glasgow and Clyde

PARTICIPANT INFORMATION SHEET

Is prisoner's knowledge about head injury improved following a brief psychoeducation programme?

We would like you to help us in a research study on knowledge of head injury and its long-term effects. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. If anything is unclear and you would like to ask us questions about the study, please speak to a staff member who will notify us. Take time to decide whether or not you wish to take part.

What is the purpose of the study?
We are carrying out this study to explore what knowledge prisoners have about head injury. We aim to examine what existing levels of knowledge about the causes, symptoms and long term effects of head injury are in prisoners. We also aim to examine whether a brief educational intervention about head injury increases prisoners existing knowledge about head injury. This study will contribute towards the researchers' qualifications, and will fulfill a component of their Doctorate in Clinical Psychology.

Why have I been invited?
You have been invited because you are currently serving a custodial sentence in Scotland.

Do I have to take part?
No, it is up to you to decide whether or not to take part, and there will be no consequences for you either way except the time required to complete the study, should you decide to take part. You will be given this information sheet to keep and if you wish to partake you will be asked to sign a consent form. If you decide to take part, you are still free to withdraw at any time and without giving a reason.

What will happen to me if I take part?
You will be invited to attend a screening appointment which will last approximately 45 minutes where you will meet with a researcher on a one to one basis and asked to complete some tasks. This will involve: (i) a brief interview about age, education and history of offending; (ii) answering questionnaires about anger, inhibition and head injuries; (iii) reading or listening to a short story about a person who has had a head injury and giving a response based on your knowledge of head injury. Within a period of four weeks you will attend a group where you will be given information about the causes, symptoms and long-term effects of head injury. The group will also have information about ways to prevent sustaining a head injury. At the end of the group you will be asked to read or listen to a short story about a person who has had a head injury and give a response based on your knowledge of head injury. Additionally, the researcher will invite you to meet with them on a one to one basis at follow up appointment around one month after attending the group. This will involve: (i) answering questionnaires about anger and inhibition; (ii) reading or listening to a short story

about a person who has had a head injury and giving a response based on your knowledge of head injury.

Where will the assessment take place?
The assessment will take place within the prison. If you need to be excused from work to attend the study, you will not lose out on any work payments.

What I will be asked to do.
You just have to attend for the assessment appointment for 45 minutes, the group which last approximately 60 minutes and a follow up appointment which will last approximately 20 minutes.

What are the possible disadvantages and risks of taking part?
There are no particular disadvantages to taking part and your participation will have no impact upon your custodial sentence.

What are the possible benefits of taking part?
You may benefit from taking part by increasing your knowledge about the causes and effects of head injury, understanding the impact of a head injury has on a person and learning ways to prevent the likelihood of sustaining a head injury. As many prisoners have head injuries taking part may be of benefit to yourself because you have a head injury or because you know someone in the prison who has had a head injury. The information collected in the study will give us a better understanding of knowledge of head injury within prisons, and may allow us to make recommendations for prison health service improvements.

Will my taking part in this study be kept confidential?
You will be identified by an identity number, and any information about you will have your name removed so that you cannot be recognised from it. Information collected will be kept within the University of Glasgow department in a locked cabinet for 10 years in order to meet record keeping guidelines and for future research. Scientific publications arising from the research will not identify you or anyone taking part. All information collected about you during the research will be kept strictly confidential, accessible only to two researchers and study supervisors, University of Glasgow, and representatives of the study Sponsor, NHS Greater Glasgow & Clyde, who will make sure that the study is being conducted correctly. However, the following exceptions apply. If during the course of the research we become concerned that you or another person is at risk of harm, or if a crime has been committed, we are obligated to pass this information on to the Scottish Prison Service. Further, if a severe head injury, with disability, is identified, we will inform the Prison Health Service of this so that it can inform your future care.

What will happen to the results of the research study?
When the project is completed, the findings will be submitted for publication in peer reviewed international journals. Further, the results may be used in conference presentations, and will be detailed within theses to fulfill the requirements of the Doctorate in Clinical Psychology. Posters will be provided to the prison for display summarising the findings of the study.

University of Glasgow | College of Medical, Veterinary & Life Sciences

NHS Greater Glasgow and Clyde

Who is organising and funding the research?
The research is organised by the University of Glasgow. The research is funded by the University of Glasgow and partly by the National Prison Healthcare Network.

Who has reviewed the study?
The project has been reviewed by the University of Glasgow College of Medical Veterinary and Life Sciences, the West of Scotland NHS Research Ethics Committee and the Scottish Prison Service.

Contact for Further Information
You can contact Louise Buchan or Professor Tom McMillan (0141 211 0354) who are organising the research.

Contact for Independent Information or Complaints

You have the right to obtain independent information or to complain about your involvement in this study if you are not happy with it.

Please tell the following member of staff in the NHS Healthcare service within [insert relevant prison establishment]:

[Insert name, designation and contact details of site specific contact]

Any complaints you have about this research will be passed on to the NHS complaint process by [insert above named contact]. The NHS complaints process will then deal with your complaint.

Thank you for considering this request to take part in the study.

Appendix 2.7 Participant Consent Form

University of Glasgow | College of Medical, Veterinary & Life Sciences

NHS Greater Glasgow and Clyde

Participant ID Number: _____

CONSENT FORM

Title: Is prisoner's knowledge about head injury improved following a brief psychoeducation programme?

Please initial box

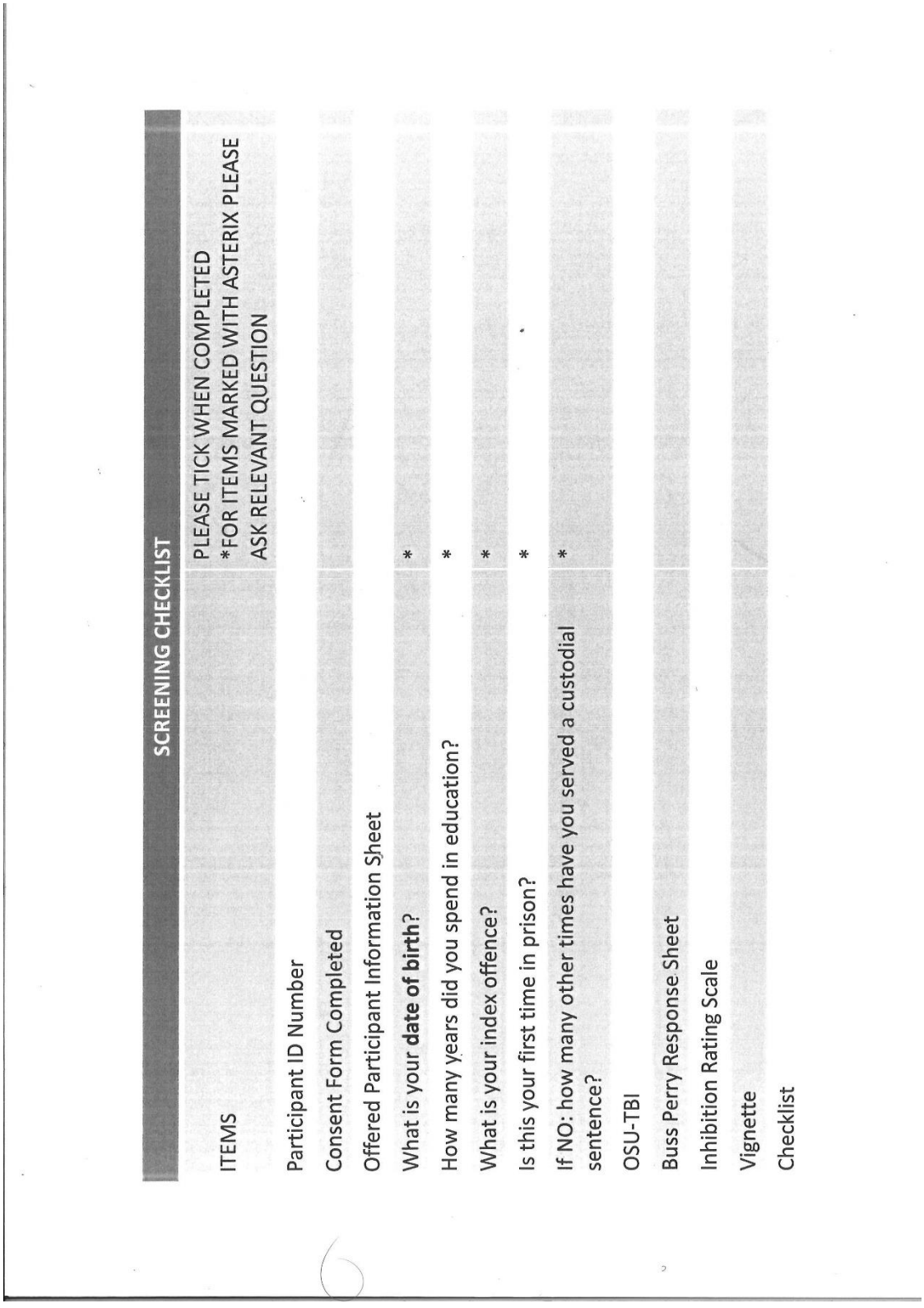
1. I confirm that I have read and understand the information sheet dated 08/01/18 (Version 3) for the above study and have had the opportunity to ask questions. ☐
2. I understand that my participation is voluntary, that it will have no effect on my custodial sentence and that I am free to withdraw at any time, without giving any reason and without my legal rights being affected. ☐
3. I agree that if researchers believe that I or another person is at risk of harm, they will pass this information to prison staff. ☐
4. I agree that, if the researchers find evidence that I have had a significant head injury, they will inform prison staff of this so that they can consider this in terms of my care. ☐
5. I understand that data collected during the study, will be looked at by individuals from University of Glasgow (1 researcher and study supervisors), from representatives of the study Sponsor, NHS Greater Glasgow & Clyde, for audit purposes, by regulatory authorities or by the NHS Board, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records. ☐
6. I agree to my data being retained for 10 years, including following loss of capacity. I understand this is for the purpose of future research and that all data will be destroyed confidentially after this period. ☐
7. I agree to take part in the above study. ☐

Name of participant	Date	Signature
Name of Person taking consent	Date	Signature

Institute of Health and Wellbeing
College of MVLS

08.01.18: V4

Appendix 2.8 Study Checklist



SCREENING CHECKLIST	
ITEMS	PLEASE TICK WHEN COMPLETED *FOR ITEMS MARKED WITH ASTERIX PLEASE ASK RELEVANT QUESTION
Participant ID Number	
Consent Form Completed	
Offered Participant Information Sheet	
What is your **date of birth**?	*
How many years did you spend in education?	*
What is your index offence?	*
Is this your first time in prison?	*
If NO: how many other times have you served a custodial sentence?	*
OSU-TBI	
Buss Perry Response Sheet	
Inhibition Rating Scale	
Vignette	
Checklist	

Appendix 2.9 Information Booklet

This booklet has been written to help increase knowledge about head injury and the long term effects.

Many people who are serving a custodial sentence have a head injury.

This information is meant to be helpful for everyone whether they have had a head injury or not.

Version 3 12.11.17

Helpful things to know about

HEAD INJURY

This booklet was produced by

University of Glasgow

in conjunction with:

NHS Greater Glasgow and Clyde

SPS Scottish Prison Service

NHS Grampian

UNDERSTANDING MY ANGER

	My triggers
	This makes me think
	This makes me feel
	What I do

9

CALM PLAN

STOP
Someone or something has made you angry

THINK
Are the facts correct?
Do you need to deal with this now?

FEEL
Take deep breaths
Get calm
Prepare yourself

DO
Walk away
Ask for help
Solve the problem

3 REASONS TO CONTROL YOUR ANGER

1. You will get on better with people
2. You will feel better about yourself
3. You are less likely to get into trouble

8

How does a head injury effect your brain?

When you have a head injury it might cause damage to your brain.

Your skull is hard and is designed to protect your brain. Your brain is made of tissue and is very soft.

An injury to your head can make your brain move around inside your skull. If your brain moves about inside your skull it may get damaged.

1

What are the most common causes of head injury?

Head injury is normally caused by being struck on the head.

Most are caused by one of the following:

Assault: Being punched, kicked or hit by an object.

Road Traffic Accident: Being knocked down by a vehicle or being in a vehicle that is in a crash.

Falling: down stairs, off a bicycle or to the ground

Males are two to three times more likely to sustain a brain injury than females.

2

How can I reduce the chances of having a head injury?

Having a head injury means you are more likely to have another head injury.

Helpful changes you can make include:

- ✓ Avoid or limit alcohol or drugs 
- ✓ Know your triggers 
- ✓ Stop and think before you act 
- ✓ Try to avoid or manage difficult situations where you might get angry 

Having a plan is the best way to help reduce your chances of having another head injury. A plan can be really helpful when you feel angry. It can also be useful in any social situation.

7

Do the effects of alcohol or drugs change after head injury?

YES! Alcohol or drugs will have a bigger effect. This means you are at a higher risk of accident or injury. Even small amounts will make you feel more drunk, high or stoned.

Alcohol or drugs also make you feel less inhibited so you are more likely to behave in unhelpful ways.

Many people get their head injury under the influence of alcohol. Avoid taking alcohol and drugs or at least try to limit what you have.

6

What symptoms often occur after a head injury?

- ❑ Headaches
- ❑ Feeling dizzy
- ❑ Tiredness
- ❑ Memory problems
- ❑ Poor concentration
- ❑ Slowed thinking
- ❑ Difficulty understanding others
- ❑ Difficulty explaining things to others
- ❑ Being short-tempered
- ❑ Feeling moody or grumpy
- ❑ Getting stressed more easily
- ❑ Anxiety
- ❑ Blurred vision
- ❑ Personality change

Many people do not link these symptoms to their head injury. Sometimes people do not notice these symptoms at all.

3

Why is head injury linked to crime and reoffending?

Anger is an emotion which you feel. Our brains notice when we are angry and try to calm us down. Anger can often be because you have misunderstood what has happened.

Sometimes a head injury affects the part of your brain which helps keep you calm. This means you might find yourself feeling angry more often than before. You might also feel angry in situations that never used to bother you.

Anger can make you behave in a way that is unpredictable and aggressive and might lead to you committing a crime.

4

Inhibition is what our brains do to stop us from behaving in ways that are unhelpful.

Inhibition is like a high wall in our brain. It stops you saying things which might upset other people or doing things which you might regret.

A head injury can lower the wall and this means you might find yourself less able to stop yourself from behaving in an unhelpful way. You might say things which upset or annoy other people or do things which are harmful.

Inhibition can make also make you behave in a way that might lead to you committing a crime, like getting into fights.

5

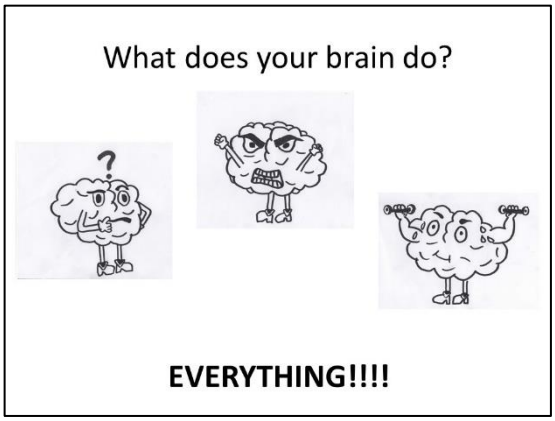
Appendix 2.10 Educational Intervention

SLIDE 1

Notes:

Welcome to session and introductions. Will be asked to take part but do not have to – okay to just listen. Basic rules: take turns to speak/respect others who do contribute. Complete vignette at end. Duration is one hour.

SLIDE 2



Notes:

Interactive Group Activity

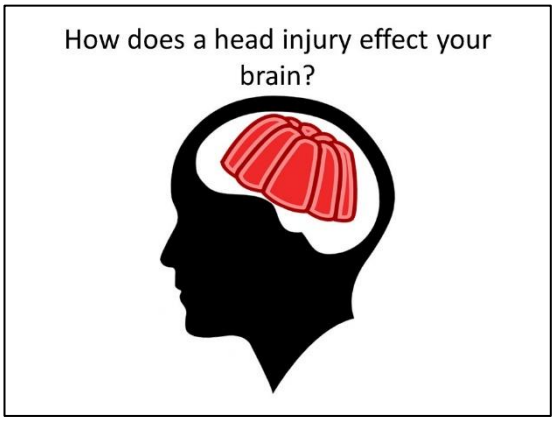
Q: "What does your brain do?" A: EVERYTHING! [click on animation]

Think/Feel/Do Go through each individually and remember to link with any suggestions given by group

Ensure the following domains are covered: memory (thinking); Attention (thinking); EF: planning,organisation,inhibition (thinking); Emotion regulation (feeling); Senses (feeling & doing); Motor function (doing & feeling)

We take brains forgranted and it is only when things go wrong that start to notice

SLIDE 3



Notes:

When you have a head injury it might cause damage to your brain.

Your skull is hard and is designed to protect your brain.

Your brain is made of tissue and is very soft.

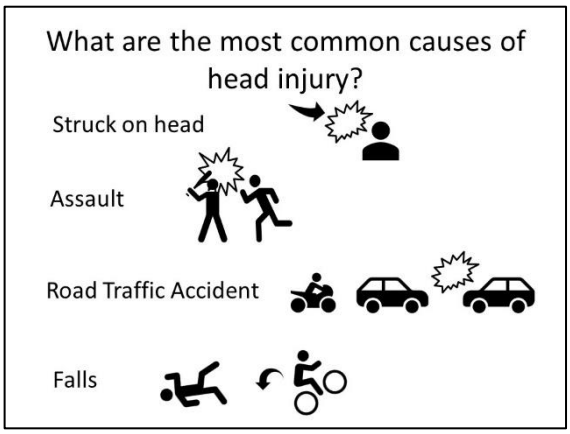
An injury to your head can make your brain move around inside your skull.

If your brain moves about inside your skull it may get damaged.

Our brains are like jelly. If you can imagine a jelly when it comes out of the mould in a nice shape, if it gets shaken around or something is pushed into it the jelly is easily damaged.

The brain is not a muscle and cannot be repaired but can find ways to help – analogy of broken leg and using walking stick

SLIDE 4



Notes:

Interactive Group Activity

Q: What is the most common cause of head injury? Ask participants to make one guess

A: Being struck on the head [click for animation effect]

Q:What are the different ways you can get a head injury?

Write responses on flip chart which may include the initial suggestions from the first question. As suggestions are made group these in categories of Assault/RTA/Falls/Other but do not explicitly communicate to group the way you are recording their responses.

A head injury is damage to the brain caused by an external force i.e. something that has happened outside your head, and for most head injuries this is because you have been struck on the head.

Assault: punched, kicked or hit with object [click on animation]

RTA: being a driver or a passenger in a car or motorbike accident, being a pedestrian and struck by a vehicle [click on animation]

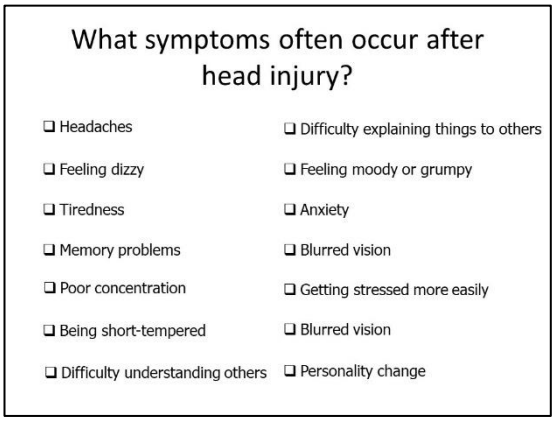
Falls: down stairs, off bicycle, to the ground – your head hits the step, pavement, ground or indeed any object nearby where you have fallen. A simple slip or stumble can result in a head injury. Swinging on your chair on two legs.

Other: cupboard door left open and you stand up/freak accidents e.g. object falling from high place

So, a head injury is normally caused when your head has come into contact with something. If your head is hit this can result in your brain getting injured. Sometimes a head injury is not always when you have been hit by something e.g. whiplash, shaking

Did you know a recent study with prisoners found that 94% self-reported at least one HI and more than half said they had sustained more than one head injury (Pitman, Haddlesey, Ramos et al., 2015). Remember we described our brains like jelly inside our skull? Having a head injury will make your brain move around. Your brain gets damaged because it can get bruised when it is moving about, torn by the inside of the skull or sliced by stronger structures in the brain

SLIDE 5



Notes:

People sometimes lose consciousness after a head injury (can be very brief lasting from minutes, hours, to days, weeks or months)

People sometimes get amnesia – forgetting or not remembering (can be very brief lasting from minutes, hours, to days, weeks or months)

After a mild head injury most of these symptoms will disappear

However, for some symptoms remain and recovery is not so good

Interactive Group Activity

Go through each symptom individually and ask participants who have had a head injury to raise their hands if they have experienced that symptom since the time of their head injury. Write up symptom and number of participants who indicated they had experienced this on a flip chart [click on animation to ensure each symptom is presented and discussed one at a time].

Fatigue: 70% of people who have had a head injury will experience this

Mood & behaviour: we are all affected by the environment and the situation we find ourselves in. All our emotions are essential including fear, aggression and depression. These were essential for our survival back in cave man days. Brain injury can affect our ability to manage these normal emotions

Many people do not link these symptoms to their head injury. Sometimes people do not notice these symptoms at all.

Go through each symptom on flip chart and ask those who raised their hand if they thought that this was linked to their head injury. Record this number on the flip chart.

Briefly discuss outcome of responses.

SLIDE 6

Notes:

There are two key things which link head injury to crime and reoffending - Anger and inhibition Lets start with anger [click for animation one] Anyone know who this is – Basil Fawlty, he's a pretty angry man at the best of times! So, anger is an emotion which you feel. Our brains notice when we are angry and try to calm us down. Anger can often be because you have misunderstood what has happened. Sometimes a head injury affects the part of your brain which helps keep you calm. This means you might find yourself feeling angry more often than before. You might also feel angry in situations that never used to bother you. Anger can make you behave in a way that is unpredictable and aggressive and might lead to you committing a crime. Head injury can change or exacerbation of previous personality (landscape/earthquake metaphore)

Watch Fawlty Towers Clip: Anger - Basil hitting car with branch

Inhibition is our ability to stop us doing or saying things, it helps us control the way we react in situations [click for animation two] Basil again, our angry man who has now had a head injury

Inhibition is what our brains do to stop us from behaving in ways that are unhelpful. Inhibition is like a high wall in our brain. It stops you saying things which might upset other people or doing things which you might regret.

A head injury can lower the wall and this means you might find yourself less able to stop yourself from behaving in an unhelpful way. You might say things which upset or annoy other people or do things which are harmful. Inhibition can make also make you behave in a way that might lead to you committing a crime, like getting into fights.

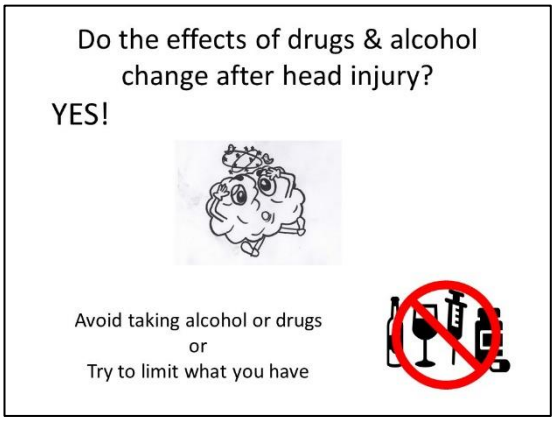
Fawlty Towers Clip: Basil mentioning the war

ANGER = RESPONSE TO A THREAT (A perceived threat which means you think it is a threat whether it actually is it is not)

Those with TBI were more likely to recidivate than those without Ray, B., & Richardson, N. J. (2017). Traumatic Brain Injury and Recidivism Among Returning Inmates. *Criminal Justice and Behavior*, *44*(3), 472-486.

41% of trauma recidivism is related to alcohol use Nunn, J., Erdogan, M., & Green, R. S. (2016). The prevalence of alcohol-related trauma recidivism: A systematic review. *Injury*, *47*(3), 551-558.

SLIDE 7



Notes:

Interactive Group Activity

Q: Do the effects of drugs and alcohol change after head injury?

A: YES [click for animation to appear]

Alcohol or drugs will have a bigger effect. This means you are at a higher risk of accident or injury. Even small amounts will make you feel more drunk, high or stoned. Alcohol or drugs also make you feel less inhibited so you are more likely to behave in unhelpful ways.

Many people get their head injury under the influence of alcohol. [click on animation]

Avoid taking alcohol and drugs or at least try to limit what you have. You are more likely to have another head injury if you have been using drugs or alcohol

Having a head injury means you are more likely to have another head injury.

Helpful changes you can make include:

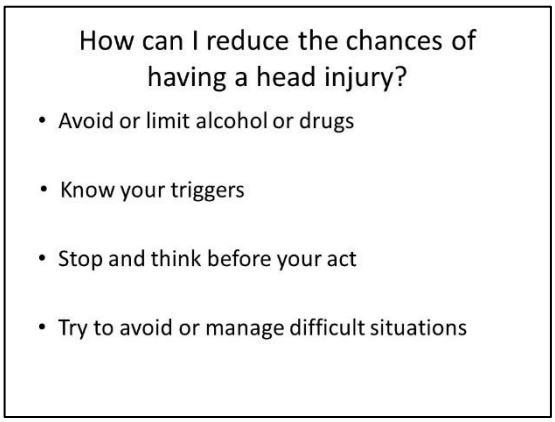
- ✓ Avoid or limit alcohol or drugs
- ✓ Know your triggers
- ✓ Stop and think before you act
- ✓ Try to avoid or manage difficult situations (especially where you might get angry)

Having a plan is the best way to help reduce your chances of having another head injury.

A plan can be really helpful when you feel angry. It can also be useful in any social situation.

Alcohol consumption increases risk of sustaining a TBI is associated with subtle cognitive deficits the source of which is undetermined Mathias, J. L., & Osborn, A. J. (2016). Impact of day-of-injury alcohol consumption on outcomes after traumatic brain injury: A meta-analysis. *Neuropsychological Rehabilitation*, 1-22.

SLIDE 8



Notes:

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Helpful changes you can make include:

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Having a plan is the best way to help reduce your chances of having another head injury.

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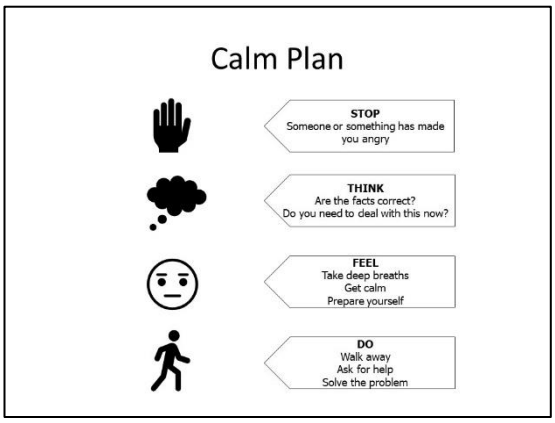
SLIDE 9



Notes:

Having a calm plan is important because controlling our emotions is not an easy process.

Does anyone here have children or know a family with children?

Think about how children go through learning to start or stop behaviours e.g. taking turns to speak, not hitting or biting when angry

As humans we have to learn ways of managing strong emotions or impulsive behaviour

This is even harder after a head injury, especially if the wall has been lowered.

NB: Emphasise that a calm plan works for not just anger, but for anxiety too.

[click for first animation]

Stop: someone or something has made you angry

In our everyday environments we can be surrounded by triggers. These can be:

- Activities - physical demands and cognitive demands (the process of thinking in order to do something) e.g. not being able to get pick something up or trying to read when someone keeps talking to you
- Other people – the effects of others behaviours and the way we respond to this. Sometimes this can be a vicious cylce

[click for second animation]

Think: are the facts correct? Do you need to deal with this now?

Q: Can anyone think of a situation where they have been angry and got their facts wrong?

A: Allow participants to share with group if they chose to do so

[click for third animation]

Feel: Take deep breaths (briefly model focussed breathing "in through nose 1, 2, 3 and out through nose 1, 2 ,3"), get calm, prepare yourself,

[click for fourth animation]

Do: walk away, ask for help, solve the problem

Q: Thinking about the situation where you had got your facts wrong do you think what you did in that situation was helpful?

Q: Do you think things have turned out better if you had behaved differently

AT THE START OF THIS SESSION WE SAID OUR BRAIN IS RESPONSIBLE FOR WHAT WE THINK WHAT WE FEEL AND WHAT WE DO. THE CALM PLAN IS TRYING TO TARGET ALL THREE OF THESE AREAS (POINT TO SLIDE) AND THAT IS TO HELP US LEARN HOW TO MANAGE DIFFICULT SITUATIONS BETTER.

Anxiety is often linked to anger as anxiety is a natural response to threatening situation (fight or flight).

Basic breathing exercises are really helpful – deep breath in and out.

This was step three in our calm plan – what we feel.

Breathing reduces the symptoms which happen in our body when we are anxious which in turn makes our levels of anxiety (and anger) go down.

You may already have your own strategies, perhaps there are some skills from other programmes you have attended in the prison which might also be useful?

Why should you have a calm plan?

Because **3 REASONS TO CONTROL YOUR ANGER** are:

1. You will get on better with people
2. You will feel better about yourself
3. You are less likely to get into trouble

YOUR CALM PLAN MIGHT NOT ALWAYS WORK OUT.

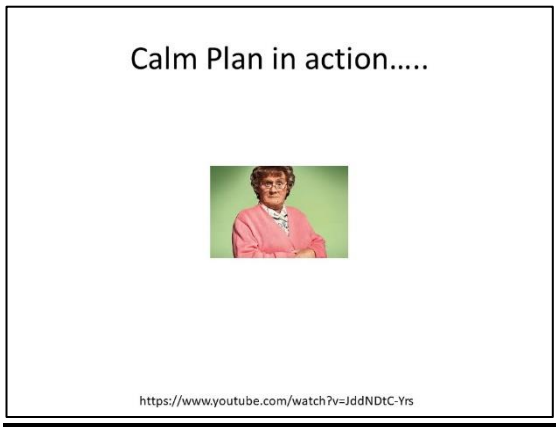
BUT PRACTICE, THE MORE YOU TRY IT THE EASIER IT WILL BECOME

YOU'RE UNLEARNING 'BAD HABITS' ABOUT THE WAY YOU RESPOND TO SITUATIONS.

PRACTICE IT IN SITUATIONS THAT ARE NOT THE MOST EXTREME (use learning to ride a bicycle analogy)

NB: It will be important to acknowledge what a person does is often driven by status amongst peers. If someone does threaten you 'social rules' dictate you stand up for yourself. If this happens within prison system implications for liberation and in outside world for reconviction (analogy - considered as 'hazards of the job').

SLIDE 10

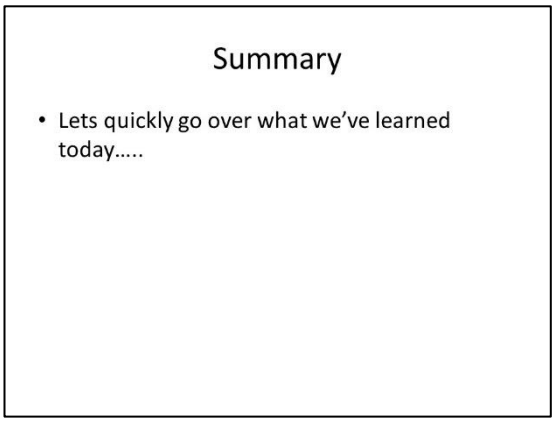


Notes:

Mrs Brown's Boys Catchphrase

She felt **angry** towards her son's mother in law but **inhibited her normal response** which would have been "f off" and said "that's nice" instead. She **behaved in a more socially acceptable way.** She went to lessons and **had to learn new behaviour.**

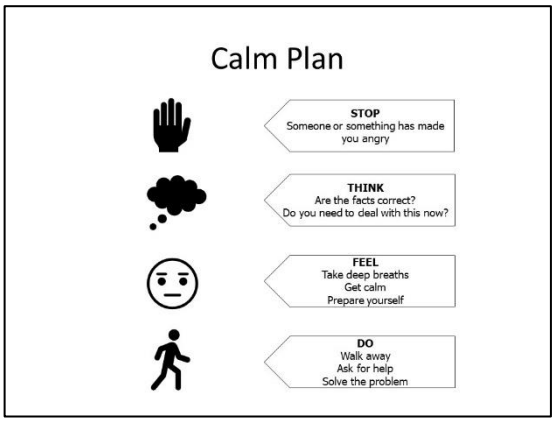
SLIDE 11



Notes:

Quick summary of all slides 2 to 10

SLIDE 12



Notes:

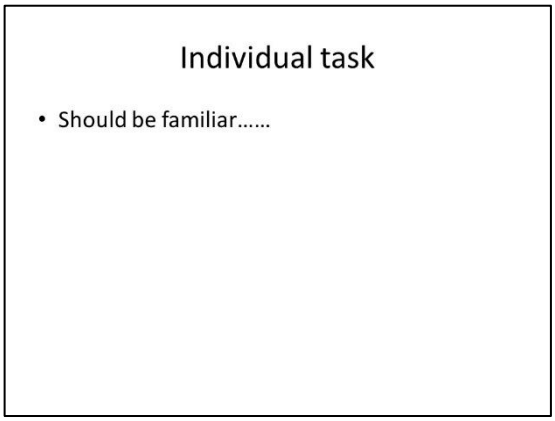
REMEMBER:

Having a calm plan is important because controlling our emotions is not an easy process.

AND

1. You will get on better with people
2. You will feel better about yourself
3. You are less likely to get into trouble

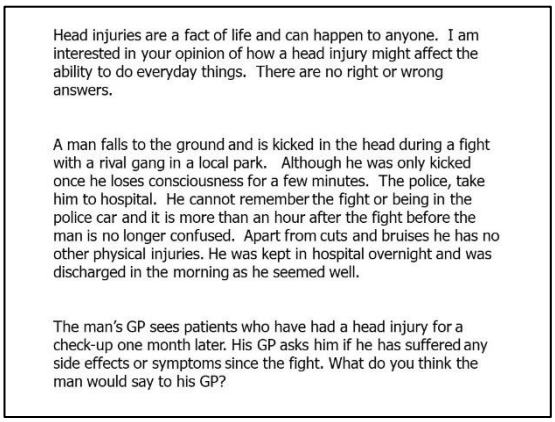
SLIDE 13



Notes:

Notify participants vignettes will be completed

SLIDE 14



Notes:

Vignette scenario for group

SLIDE 15

Notes:

Issue booklet to participants

Advise participants that they will be sent an invitation to a follow up appointment

Answer any questions

Identify if any participants are distressed and follow protocol

Appendix 2.11 Vignettes and response sheets

Head injuries are a fact of life and can happen to anyone. I am interested in your opinion of how a head injury might affect the ability to do everyday things. There are no right or wrong answers.

A man falls to the ground and is kicked in the head during a fight with a rival gang in a local park. Although he was only kicked once he loses consciousness for a few minutes. The police, take him to hospital. He cannot remember the fight or being in the police car and it is more than an hour after the fight before the man is no longer confused. Apart from cuts and bruises he has no other physical injuries. He was kept in hospital overnight and was discharged in the morning as he seemed well.

The man's GP sees patients who have had a head injury for a check-up one month later. His GP asks him if he has suffered any side effects or symptoms since the fight. What do you think the man would say to his GP?

Scenario 1 Version 2 23.11.17

Head injuries are a fact of life and can happen to anyone. I am interested in your opinion of how a head injury might affect the ability to do everyday things. There are no right or wrong answers.

A man falls to the ground after being hit on the head in a fight in the pub. Although he was only hit once, he loses consciousness for an hour. Apart from some cuts and bruises, he has no has no obvious injuries. He decides to go home the next day, although the ward staff ask him to stay in hospital for longer because he still seems a bit confused. He cannot remember the fight.

The hospital always write to GPs about people they see. His GP sees him for a check-up four weeks later and asks if he has side effects or symptoms since the fight. What do you think the man would say to his GP?

Scenario 2 Version 2 23.11.17

Head injuries are a fact of life and can happen to anyone. I am interested in your opinion of how a head injury might affect the ability to do everyday things. There are no right or wrong answers.

A man goes out for a few drinks with friends. On the way home he slips on the kerb and falls and bangs his head on the pavement. He is knocked out for a minute or two. His friends think he is drunk and take him home and put him to bed. He doesn't feel good the next day and thinks he has a hangover. He has bruises but no other obvious injury and remembers nothing about the night before.

His partner is still worried about the head knock a few days later and persuades him to phone his GP, who sees him a week after the fall. His GP asks him if he has any side effects or symptoms since the fall. What do you think the man would say to his GP?

Scenario 3 Version 2 23.11.17

Participant ID Number: _____ Date completed: _____ Scenario Number: _____

Response Sheet Page 1 Version 2 23.11.17

Appendix 2.12 Symptom Check List

✓ Tick the box if you think the man had any of the following side effects or symptoms after his head injury. There are no right or wrong answers.

- ❑Headache
- ❑Slowed thinking
- ❑Tiredness
- ❑Difficulty understanding others
- ❑Feeling dizzy
- ❑Anxiety
- ❑Being short tempered
- ❑Memory problems
- ❑Getting stressed more easily
- ❑Blurred vision
- ❑Lack of concentration
- ❑Difficulty explaining things to others
- ❑Feeling moody or grumpy
- ❑Personality change

Participant ID Number: _____ Date completed: _____ Scenario Number: _____

Response Sheet Page 2 Version 2 23.11.17

Appendix 2.13 Anger and Hostility Rating Scale

Please rate each of the following items in terms of how characteristic they are of you.

Use the following scale for answering these items.

1	2	3	4	5	6	7
Extremely uncharacteristic of me						**Extremely characteristic of me**

Question	Rating
I flare up quickly but get over it quickly.	
When frustrated, I let my irritation show.	
I sometimes feel like a powder keg ready to explode.	
I am an even-tempered person.	
Some of my friends think I'm a hothead.	
Sometimes I fly off the handle for no good reason.	
I have trouble controlling my temper.	
I am sometimes eaten up with jealousy.	
At times I feel I have gotten a raw deal out of life.	
Other people always seem to get the breaks.	
I wonder why sometimes I feel so bitter about things.	
I know that "friends" talk about me behind my back.	
I am suspicious of overly friendly strangers.	
I sometimes feel that people are laughing at me behind me back.	
I sometimes feel that people are laughing at me behind me back.	
When people are especially nice, I wonder what they want.	

Participant ID Number: ____ Date of Completion: _____ Buss-Perry Response Sheet Version 2 22.11.17

Appendix 2.14 Inhibition Rating Scale

	Never		Half of the time		Always
Do you get easily angered?	o	o	o	o	o
Do you do things impulsively?	o	o	o	o	o
Do you laugh or cry too easily?	o	o	o	o	o
Do you make sexual comments?	o	o	o	o	o
Do you do embarrassing things?	o	o	o	o	o
Are you hyperactive?	o	o	o	o	o
Do you talk out of turn?	o	o	o	o	o
Do you get into trouble in the prison?	o	o	o	o	o
Do you do risky things?	o	o	o	o	o
Are you over silly?	o	o	o	o	o
Do you have loss of taste or smell?	o	o	o	o	o
Do you swear?	o	o	o	o	o
Are you sensitive to others?	o	o	o	o	o
Do you get along with others?	o	o	o	o	o
Do you act appropriately?	o	o	o	o	o

Participant ID Number: ____ Date of Completion: _____

Inhibition Rating Scale Version 2 22.11.17

Name: _____ Current Age: _____ Interviewer Initials: _____ Date: _____

Ohio State University TBI Identification Method — Interview Form

Step 1

Ask questions 1-5 below. Record the cause of each reported injury and any details provided spontaneously in the chart at the bottom of this page. You do not need to ask further about loss of consciousness or other injury details during this step.

I am going to ask you about injuries to your head or neck that you may have had anytime in your life.

1. In your lifetime, have you ever been hospitalized or treated in an emergency room following an injury to your head or neck? Think about any childhood injuries you remember or were told about.
   ☐ No ☐ Yes—Record cause in chart
2. In your lifetime, have you ever injured your head or neck in a car accident or from crashing some other moving vehicle like a bicycle, motorcycle or ATV?
   ☐ No ☐ Yes—Record cause in chart
3. In your lifetime, have you ever injured your head or neck in a fall or from being hit by something (for example, falling from a bike or horse, rollerblading, falling on ice, being hit by a rock)? Have you ever injured your head or neck playing sports or on the playground?
   ☐ No ☐ Yes—Record cause in chart
4. In your lifetime, have you ever injured your head or neck in a fight, from being hit by someone, or from being shaken violently? Have you ever been shot in the head?
   ☐ No ☐ Yes—Record cause in chart
5. In your lifetime, have you ever been nearby when an explosion or a blast occurred? If you served in the military, think about any combat- or training-related incidents.
   ☐ No ☐ Yes—Record cause in chart

Interviewer instruction:
If the answers to any of the above questions are "yes," go to Step 2. If the answers to all of the above questions are "no," then proceed to Step 3.

Step 2

Interviewer instruction: If the answer is "yes" to any of the questions in Step 1 ask the following additional questions about each reported injury and add details to the chart below.

Were you knocked out or did you lose consciousness (LOC)?

If yes, how long?

If no, were you dazed or did you have a gap in your memory from the injury?

How old were you?

Step 3

Interviewer instruction: Ask the following questions to help identify a history that may include multiple mild TBIs and complete the chart below.

Have you ever had a period of time in which you experienced multiple, repeated impacts to your head (e.g. history of abuse, contact sports, military duty)?

If yes, what was the typical or usual effect—were you knocked out (Loss of Consciousness - LOC)?

If no, were you dazed or did you have a gap in your memory from the injury?

What was the most severe effect from one of the times you had an impact to the head?

How old were you when these repeated injuries began? Ended?

Step 1	Step 2						
	Loss of consciousness (LOC)/knocked out				Dazed/Mem Gap		Age
Cause	No LOC	< 30 min	30 min-24 hrs	> 24 hrs	Yes	No	

If more injuries with LOC: How many?_____ Longest knocked out?_____ How many ≥ 30 mins.?_____ Youngest age? _____

Step 3	Typical Effect		Most Severe Effect				Age	
Cause of repeated injury	Dazed/ memory gap, no LOC	LOC	Dazed/ memory gap, no LOC	LOC < 30 min	LOC 30 min - 24 hrs.	LOC > 24 hrs.	Began	Ended

Adapted with permission from the Ohio State University TBI Identification Method (Corrigan, J.D., Bogner, J.A. (2007). Initial reliability and validity of the OSU TBI Identification Method. J Head Trauma Rehabil, 22(6):318-329.

(Continuation from reverse side, if needed)

Name: _____ **Current Age:** _____ **Interviewer Initials:** _____ **Date:** _____

Step 1	Step 2						
	Loss of consciousness (LOC)/knocked out				Dazed/Mem Gap		Age
Cause	No LOC	< 30 min	30 min-24 hrs	> 24 hrs	Yes	No	

If more injuries with LOC: How many?_____ Longest knocked out?_____ How many ≥ 30 mins.?_____ Youngest age? _____

Step 3	Typical Effect		Most Severe Effect				Age	
Cause of repeated injury	Dazed/ memory gap, no LOC	LOC	Dazed/ memory gap, no LOC	LOC < 30 min	LOC 30 min - 24 hrs.	LOC > 24 hrs.	Began	Ended

Interpreting Findings

A person may be more likely to have ongoing problems if they have any of the following:

- **WORST**
  One moderate or severe TBI
- **FIRST**
  TBI with loss of consciousness before age 15
- **MULTIPLE**
  2 or more TBIs close together, including a period of time when they experienced multiple blows to the head
- **RECENT**
  A mild TBI in the last weeks or a more severe TBI in the last months
- **OTHER SOURCES**
  Any TBI combined with another way that their brain function has been impaired

For more information about TBI or the OSU TBI Identification Method visit:

- Ohio Valley Center at OSU
  www.ohiovalley.org/informationeducation
- BrainLine.org
  www.brainline.org

(Updated July 2013)

Appendix 2.16 MRP Proposal

MRP Proposal

Is prisoner's knowledge about head injury improved following a brief psychoeducation programme?

Matriculation Number: 2230372B

Date of submission: 10th November 2017

Version 13

Word Count: 3413

Abstract

Developing educational based interventions for head injury awareness is recognised as a key area to support the development of brain injury services for people at risk of head injury who are prisoners. The present study aims to explore what prisoners know about symptoms and long-term effects of head injury and develop a low cost group psychoeducational programme about head injury which can be delivered to large numbers in prisons. Participants will be male offenders aged 18 and over serving a custodial sentence. Posters will be circulated within the prison and individuals interested in participating will notify prison staff. Participants will attend an initial screening appointment followed by a psychoeducation group lasting one hour then a one month follow up appointment post-group where they will complete vignettes and symptom checklists to capture their knowledge of head injury. Comparisons will be made between these time points to evaluate the effectiveness of the intervention. Self-reported levels of anger and impulsivity pre and post group will also be measured. The brief intervention group is an initial step towards developing an intervention suitable for delivery in Scottish prisons by NHS staff.

1. Introduction

The prevalence of head injury (HI) in offenders has been estimated to be 50% (Farrer & Hedges, 2011) to 60% (Shiroma et al., 2010). Resources for intervention have been identified as a key area to support the development of NHS brain injury services in the Scottish Prison System (NPHN BI & Offending, 2016). In the UK there is no research exploring the effectiveness of potential interventions despite the consensus that needs of prisoners with HI are not being met (O'Rourke et al., 2016). The Scottish Intercollegiate Guidelines Network (2013) recommends the provision of information, reassurance and educational approaches for treatment of mild Traumatic Brain Injury (mTBI) of which supporting evidence was reported in a recent systematic review (Nygren-de Boussard, Holm, Cancelliere et al., 2014). However, provision of advice for early symptom management in the acute phase following HI is not necessarily a prerequisite for retention of information (McMillan, McKenzie & Swann et al., 2009)

A recent study on a sample of 139 prisoners found that 94% self-reported at least one HI of which 59% reported more than one HI and most of these were mild (Pitman, Haddlesey, Ramos et al., 2015). Long term effects of mild HI (mHI) are less apparent and attribution of functional changes, by the individual or others they interact with, are typically not associated with HI including impulsivity and aggression (NPHN BI & Offending, 2016). Persistent symptoms following mHI include headaches, fatigue, dizziness, anxiety, impaired memory and concentration, intolerance of stress, reduced processing speed blurred vision and personality (Laborey, Masson, Ribereau-Gayon et al., 2014). Studies using vignettes and checklists that explore the knowledge, symptoms and long term consequences of HI in the general population report that knowledge of persisting symptoms is limited

even in those with a history of mTBI (Mackenzie & McMillan, 2005; Mulhern & McMillan, 2006) and provision of information to improve knowledge has been recommended (McKinlay, Bishop & McLellan, 2011).

There is no evidence evaluating the effectiveness of psychoeducation programmes for HI. Psychoeducation programmes for people with mental health problems in a forensic hospital setting improve participant's understanding of mental illness (Barnao & Ward, 2015). Whilst most programmes of this kind are designed for psychosis, interventions developed in this setting can be adapted to meet the needs of a forensic population (Barnao & Ward, 2015). Psychoeducation programmes can also have beneficial outcomes in the community. A randomised control trial demonstrated efficacy of treatment for brief interventions for patients with antisocial personality disorder, reporting small effect sizes in reducing drug (SMD=0.22) and alcohol (SMD=0.23) misuse and moderate effect sizes for reduction in self-reported aggression (SMD=.51) (Thylstrup, Schroder and Hesse 2015). A brief psychoeducation for alcohol misuse can reduce alcohol consumption (Kaner, Beyer, Dickinson et al., 2007) and also in prison (Orr, McAuley, Graham, & McCoard, 2015). It is widely accepted that tolerance to alcohol, and intoxicants, is reduced after HI and in combination with impulsive behaviours associated with HI, increase the likelihood of antisocial behaviour that can lead to repeat HI and offending (NPHN BI & Offending, 2016). Hence psychoeducation incorporating use of alcohol, aggression and impulsivity seems important in any brief intervention in a prison population.

There is a paucity of research evaluating interventions targeting knowledge and awareness of HI generally (Nygren-de Boussard, Holm, Cancelliere et al., 2014) and especially in forensic settings (Allely, 2016) and this study will examine the

effectiveness of a simple psychoeducation intervention that might be suitable resource for delivery in prisons.

2. Aims and hypotheses

2.1 Aims

2.1.1 To explore what prisoners know about the effects of head injury

2.1.2 To deliver a novel low cost psychoeducational programme about the causes and effects of head injury and measure the effectiveness of the intervention.

2.2 Hypotheses

2.2.1 Knowledge about the effect of HI is greater in prisoners who self-report a history of HI than in those who do not.

2.2.2 A single session psychoeducation programme about head injury will improve knowledge about the following:

- How does a head injury affect your brain?
- What are the most common causes of head injury?
- What symptoms often occur after a head injury?
- Do the effects of alcohol or drugs change after a head injury?
- Is head injury linked to crime and reconviction?
- How can I reduce the chances of having a head injury?

2.2.3 Knowledge about HI will be greater 1 month after the session than before.

2.2.4 A single session psychoeducation programme about head injury will improve self-reported levels of aggression and impulsivity.

3. Plan of Investigation

3.1 Participants

Participants will be recruited from HM Prisons Shotts, Grampian and Low Moss in Scotland.

Inclusion Criteria

1. Participants will be male offenders aged 18 and over serving a custodial sentence.
2. Capable of consenting to participate

Exclusion Criteria

1. Severe cognitive, physical or sensory impairment which affects ability to participate independently in a group setting.
2. Do not possess basic literacy skills.
3. Neurological degenerative disease or acute and severe mental health disorder
4. Not fluent in English

3.2 Recruitment Procedures

Recruitment posters will be issued to SPS managers who would subsequently display study posters and information sheets in the prison health centre and individual flats. Therefore ascertaining the number of participants declining participation is not possible. Prisoners would express their interest in the study by writing their name on a sheet of paper which would be handed to prison staff and forwarded to the researcher by SPS managers. Ms A. McGinley and Ms V.Walker, DClinPsy Research Post Graduates at the University of Glasgow, successfully implemented similar procedures in a recent study at HMP Shotts. Those expressing an interest would attend an individual screening appointment scheduled by the researcher and SPS to review the content of the information sheet, provide informed written consent to take part in the study and complete outcome measures. Following

screening appointments prisoners would be allocated a time to attend the psychoeducation group co-ordinated by the researcher and SPS managers.

3.3 Design and Research Procedures

The study is a pre-post design. The independent variables are head injury: self reported with or without and pre intervention knowledge of head injury.

Structure

Participants will attend a screening appointment with the researcher or research assistant lasting 45 minutes and a single psychoeducation group intervention delivered by the researcher lasting approximately one hour. The researcher will deliver six to eight psychoeducation groups of 6 to 10 participants across up to three prison sites (HMP Grampian, Shotts and Low Moss). The initial group will be used for pilot testing purposes to identify strengths and weakness of the intervention leading to more reliable results in subsequent groups. Participants will be asked to rate the resources by raising their hand in response to one of the following verbal options: ‘too hard’, ‘too easy’ or ‘okay’ and asked for feedback when too hard or too easy is reported. Appropriate modifications would be made to decrease the likelihood of floor or ceiling effects. the researcher or research assistant invite all participants to a 1:1 follow up appointment one month after attending the group. A summary of measures completed at each stage of the study design is reported in Table 1.

Table 1:

Summary of Data Collection for Study Design

Stage	Measures
Pre Group: Screening appointment	**Knowledge based measures:** Vignettes & symptom checklist **Descriptive measures:** Age, education, history of offending **Self report measures:** Buss Perry Aggression Questionnaire Ohio State University Traumatic Brain Injury Identification Method Inhibition rating scale
Post Group: End of group intervention session within allocated hour	**Knowledge based measures:** Vignettes & symptom checklist
Follow up: Completed 1 month after attending group	**Knowledge based measures:** Vignettes & symptom checklist **Descriptive measure:** Age education, history of offending **Self report measures:** Buss Perry Aggression Questionnaire Inhibition rating scale

Measures

Knowledge based measures derived from the content of the intervention would be used to evaluate the effectiveness of the brief psychoeducation programme. Based on previous research participant knowledge would be measured using vignettes and symptom checklists (Mackenzie and McMillan, 2005; Mulhern and McMillan, 2006). An expert review concluded future research should use the authors' vignettes depicted in both studies (Sullivan, Edmed & Cunningham, 2013). Impulsive responding will be measured using a self report scale based upon the Disinhibition subscale of the Frontal Systems Behaviour Scale (FrSbe) (Grace & Malloy, 2001) which has shown convergent and discriminant validity of patients with and without frontal lobe damage (Bogner & Corrigan, 2009). Anger and hostility will be

measured by the Buss-Perry Aggression Questionnaire (BPAQ) (Buss & Perry, 1992) using the 7-item Anger scale and 8-item Hostility scale. BPAQ has been found to show internal consistency, test/retest reliability and construct validity in offender populations (Bogner & Corrigan, 2009). De-escalation strategies are part of the psychoeducation and the inhibition rating scale and BPAQ will capture any change in levels of self-reported inhibition and aggression.

The Ohio State University Traumatic Brain Injury Identification Method (OSU-TBI-ID) will be used to measure prevalence of head injury of participants. It has demonstrated reliability and predictive validity in prisons (Bogner & Corrigan, 2009) and is a cost-effective screening tool to assess history of TBI (O'Rourke, Linden, Lohan et al., 2016) in prison populations. The abbreviated version can be completed in approximately 10 minutes.

The descriptive measures will be used to characterise the participant sample.

Content

The brief psychoeducation session will focus on the six questions specified in the hypothesis and content will be delivered via interactive teaching methods including PowerPoint presentation, group discussion and visual aids. After group attendance, all participants will be issued with a booklet summarising the content of the session written at readability level recommended for individuals with head injury (Macdonald, McMillan & Kerr, 2010). Large effect size (Eta squared = 0.15) are reported following the provision of adapted self-help information booklets to reduce anxiety symptoms in a prison population (Maunder, Cameron, Moss et al., 2009).

3.4 Data Analysis

Pre group measures (see Table 1) will be completed on a 1:1 basis with the researcher during the screening appointment. Participants will also be asked to

read the vignette and write their responses. Participants able to complete this measure independently or write responses to a vignette read aloud will automatically meet inclusion criteria. For the remainder, clinical judgement and willingness to receive additional support in a group setting will determine suitability for inclusion. Participants displaying limited cognitive ability to understand the content or concept of the task will meet exclusion criteria.

Post group outcomes (see Table 1) will be completed at the end of the group following delivery of the psychoeducation content. As participant ability is ascertained prior to attendance it is expected these tasks can be undertaken on an individual basis by participants, facilitated by the researcher as required.

Follow up measures will be completed at an appointment one month after the group.

In the absence of a standard test for knowledge, participant difference scores will be calculated pre and post intervention and pre intervention and at 1 month follow up. A comparison of self-reported impulsivity and aggression will be made pre intervention and at 1 month follow up and to explore whether there is an interaction between HI knowledge and levels of impulsivity and aggression. Comparisons will also be made between pre-group knowledge of head injury in prisoners with a history of head injury and in those without. The OSU-TBI-ID will be used to determine the prevalence of HI. Descriptive data will be used to characterise the sample.

3.5 Justification of sample size

A brief intervention on knowledge of head injury in a prison population was not identified. Alcohol, head injury and offending are often associated and the meta-analysis by Moyer, Finney, Searingen et al. (2002) comparing various brief interventions for alcohol across differing settings to control groups may be helpful in estimating sample size. They report aggregated effect sizes (d= 0.14 to 0.67) in favour of the intervention. If taking power of 0.80 probability to detect a medium-sized effect (.05) with $p < 0.05$, the sample size required using G*Power (Version 3.1; Faul, Erdfelder, Lang & Buchner, 2007) for a paired samples t-test is 26. Given that this estimate is not based on a HI sample a larger n of 50 will be targeted which is considered feasible as researchers McGinley and Walker successfully recruited 85 participants in HMP Shotts for a 1 hour interview over a recent three month period. Refusal rates after participants expressed an interest in their study was zero.

3.6 Settings and Equipment

Facilities within each SPS site will accommodate 1:1 appointments and delivery of the group intervention.

Resources required for delivery of the psychoeducation programme would be produced by the researcher and printed using University of Glasgow IT facilities, Administration Building, Gartnavel Royal Hospital.

4. Health and Safety Issues

The research will be conducted in accordance with current SPS and NHS health and safety guidelines.

Researcher Safety Issues

The researcher will complete mandatory SPS induction training undertaken by all staff working in prisons prior to conducting the research. Risk related to conducting research will be assessed by the SPS.

Participant safety issues

The researcher is undertaking a level of clinical training sufficiently appropriate to identify any areas of potential concern which would be raised with an appropriate member of staff.

See Appendix 1 for further information.

5. Ethical Issues

Submissions will be made to NHS West of Scotland Research Ethics Committee and the Scottish Prison Service Ethics Committee.

Participant confidentiality

Data will be anonymous and stored securely. Paper work will be kept securely along with the site file in an area identified within an SPS or NHS site. Any electronic data will be anonymised and stored on an NHS computer or University of Glasgow.

Limits to confidentiality would be if risk to participant, others or researcher are identified.

6. Financial Issues

It is estimated costs will not exceed the £200 budget (see Appendix 2).

7. Proposed Timetable

September-October 2017	• Researcher and supervisor to discuss proposal with SPS • Supervisor to initiate Informal discussion with SPS to discuss proposal and identify potential barriers. • Dr F Summers, NHS Grampian to discuss proposal with HMP Grampian • Development of intervention
November-December 2017	• NHS Ethics Submission • Begin recruitment • Run pilot group to assess feasibility of content
January 2018-April 2018	• Data collection
May 2018-June 2018	• Data entry, analysis and write up

8. Practical Applications

Development of brief psychoeducation programme is an initial step towards delivering a low cost wide scale intervention which is suitable for delivery across the SPS by NHS or SPS staff.

Research will be disseminated through doctoral thesis, publication in scientific journal and a summary of the study will be provided to the SPS, NPHN BI & Offending and NHS for circulation. Feedback will not be given to participants due to fluidity in prison systems.

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Thylstrup, B., Schrøder, S., & Hesse, M. (2015). Psycho-education for substance use and antisocial personality disorder: a randomized trial. *BMC psychiatry*, *15*(1), 283.

Appendix 1 Health & Safety

1. Title of Project	Is prisoner's knowledge about head injury improved following a brief psychoeducation programme?
2. Trainee	Louise D Buchan
3. University Supervisor	Professor Tom McMillan
4. Other Supervisor(s)	
5. Local Lead Clinician	
6. Participants:	Male offenders aged 18 years and over serving custodial sentence.
7. Procedures to be applied (eg. questionnaire, interview. etc)	Delivery of a brief group psychoeducation programme for head injury using vignettes and symptom checklists to measure knowledge of head injury pre and post intervention.
8. Setting (where will procedures be carried out?) i) General ii) Are home visits involved	i) HMP Shotts, HMP Grampian and HMP Lowmoss: Scottish Prison Service ii) No
9. Potential Risk Factors identified (see chart)	This participant sample can be associated with impulsive, irrational or unpredictable behaviours and/or has poor emotional control.
10. Actions to minimise risk (refer to 9)	Study procedures are similar to those used by clinical psychologists in a high secure forensic setting and do not typically elicit significant stress. The setting is used routinely for delivery of health care or rehabilitation in the prison. SPS health and safety procedures exist to minimise risk to staff members and training will be undertaken by the researcher prior to commencing research in the prison. Existing

	SPS procedures are considered adequate to manage risk in the context of the proposed study.

Trainee signature: Date:

University supervisor signature: Date:

Appendix 2: Research Costs and Equipment

Trainee *Louise D Buchan*

Year of Course: 2nd **Intake Year:** 2015
Please refer to latest stationary costs list (available from student support team)

Item	Details and Amount Required	Cost or Specify if to Request to Borrow from Department
Stationary	**2 reams paper @2.18**	Subtotal: **£4.36**
Postage		Subtotal:
Photocopying and Laser Printing (**includes cost of white paper**)	Items per participant N = 60 • 1 booklet (3 sheets) • 1 consent sheet • 1 questionnaire Posters = 60 **Estimated 600 copies @0.05p**	Subtotal: **£30.00**
Equipment and Software	**2 Learning resources soft foam cross sectional brain model @ £12.99**	Subtotal: £35.98
Measures		

Miscellaneous		Subtotal:
Total		**£70.34**

For any request over £200, please provide further justification for all items that contribute to a high total cost estimate. Please also provide justification if costing for an honorarium:

Trainee Signature…… … Date……

Supervisor's Signature …….. Date ……